The Veterinary Record.

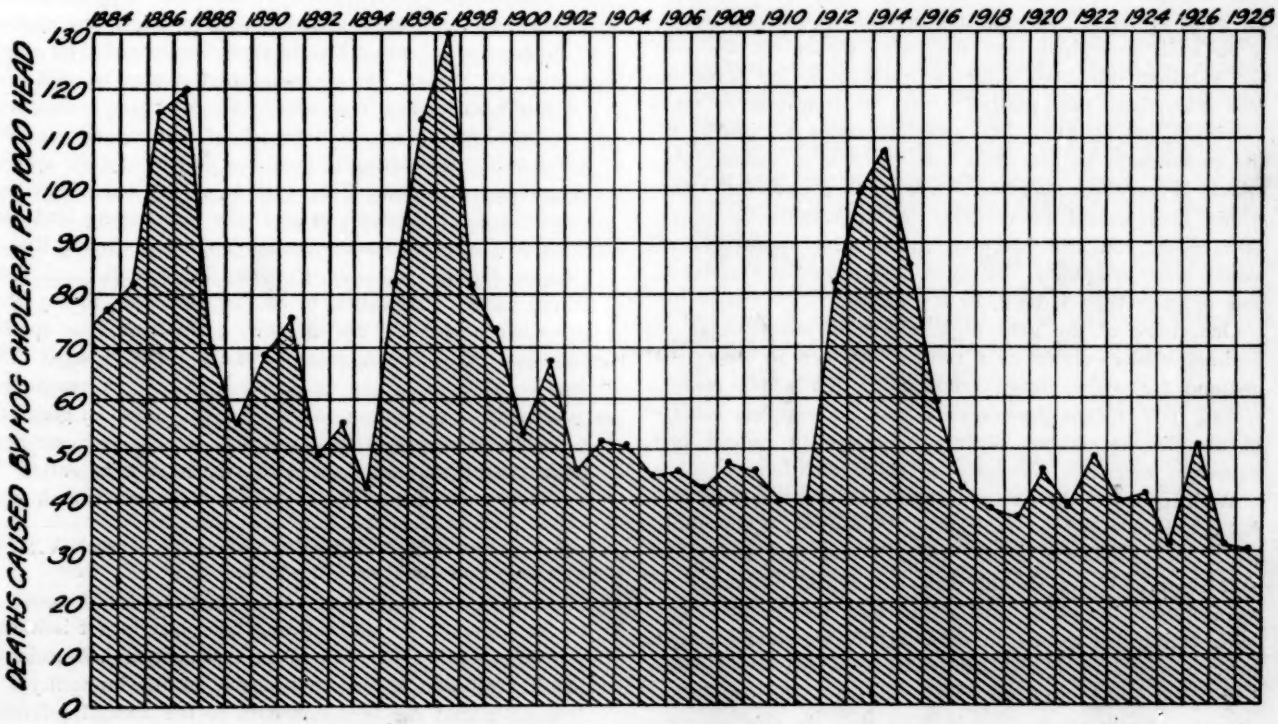
FOUNDED BY WILLIAM HUNTING, F.R.C.V.S., 1888.

NO. 49. DECEMBER 6, 1930. VOL. 10.

Swine Fever.

By Dr. D. M. Campbell, Editor "Veterinary Medicine," Chicago.

Complying with the request of Mr. G. Mayall in the October issue of the *Veterinary Record,* I am very glad to enclose a chart taken from an official report of the U.S. Department of Agriculture showing the prevalence of swine fever in this country from 1884 to 1928 inclusive.



DEATHS OF HOGS, CAUSED BY HOG CHOLERA, IN THE UNITED STATES, 1884-1928.

The history of swine fever in this country for the past 100 years, or rather since 1833 when it first attracted wide attention, shows that it has occurred in great waves increasing with considerable regularity over a period of years until the loss reached 120 to 130 hogs per thousand hogs, and then receding more sharply than it rose until the loss was but little more than one-third of this amount, or about 50 hogs per thousand, the periods between the peaks in losses being ten to fifteen years.

Anti-hog-cholera serum and virus was introduced in this country in 1908. For five years it was but little used. However, when the wave of swine fever, that reached its peak in 1914, was well under way, it began to have wide application and there is reason to believe that this was responsible for the fact that when this wave reached its peak it failed to go higher in losses than 108 per thousand.

Since that time the losses from swine fever have remained at 30 to 50 hogs per thousand of hog population yearly. In 1926, the stage appeared completely set for another upswing of losses from the disease. I know of no experienced observer but contends that the loss in 1927 would not have reached 130 per thousand had it not been for the use of anti-hog-cholera serum, which stopped the upswing at 51 per thousand, and promptly reduced it to the lowest point in the history of swine fever in this country.

The following table shows the losses yearly, and the number of hogs for each year since 1915, except for 1929 (ending June 30th, 1930), official figures for which indicate the lowest losses in the history of the disease.

Year.	No. on hand Jan. 1st.	Estimated number of deaths from cholera.
1913 ...	61,178,000	6,064,000
1914 ...	58,933,000	6,304,000
1915 ...	64,618,000	5,541,000
1916 ...	67,766,000	4,057,000
1917 ...	67,453,000	2,959,000
1918 ...	71,374,000	2,701,000
1919 ...	75,587,000	2,815,000

Year.	No. on hand Jan. 1st.	Estimated number of deaths from cholera.
1920 ...	72,909,000	3,377,000
1921 ...	66,649,000	2,648,000
1922 ...	56,996,000	2,774,000
1923 ...	65,501,000	2,772,000
1924 ...	54,234,000	1,674,000
1925 ...	55,568,000	902,000 (exclusive of pigs).
1926 ...	52,055,000	745,000 ,, ,, ,,
1927 ...	52,536,000	678,000 ,, ,, ,,
1928 ...	60,420,000	1,388,000 inclusive ,, ,,

Neither the amount of serum used in this country nor the loss of hogs from swine fever bears *any relation* to the *efficacy of the serum* as an effective preventive of the disease. The use of anti-hog-cholera serum is on a purely voluntary basis and is governed chiefly by the danger that the swine owner deems to exist from swine fever and the price of hogs. The efficacy of anti-hog-cholera serum is so well recognized that the swine owner usually will not vaccinate his hogs until he hears of swine fever in his immediate community; then, he reasons, he can vaccinate and be safe. If swine fever does not appear in the community, he will thus save the cost of vaccination, which is very considerable. He further considers that if his herd should be the first in the community to be affected, he can still vaccinate at the first appearance of swine fever symptoms and he will probably not suffer a loss of more than 1, or 2, or 3 per cent.

One result of the very high degree of effectiveness of anti-hog-cholera serum as a control has been to lessen the demand for swine fever eradication; the swine rearer, feeling sure that he possesses a means for complete control of the disease, is but slightly interested in radical and expensive measures necessary for its eradication.

With regard to the German experience mentioned by Mr. Mayall, that could be multiplied, I presume, 1,000 times from official records in this country and then multiplied still more. If we should pick out 44,000 outbreaks of swine fever in which anti-hog-cholera serum was used with favourable results in only 28,000, we should simply have a record of 16,000 outbreaks in which it had been improperly used, and regardless of what the conditions may be elsewhere, we should hold that, in this country, there was not a justifiable excuse for mistakes in this percentage of outbreaks. By " improperly used " in the foregoing, I do not refer exclusively nor even principally to the size of the dose or the technique of vaccination, but also and to a greater degree, to mistaken diagnosis, swine fever complicated by other diseases and to improper feeding and care of the hogs subsequent to vaccination.

We believe we can foretell with reasonable accuracy what anti-hog-cholera serum will do, but after all these years and all this loss from the disease, there still seems a good deal to learn about swine fever, particularly as to its mode of spread. Many ways of spreading the infection are known, but not all of them will explain some outbreaks, and it is believed by many that there are effective measures of spreading this disease that are as yet unsuspected.

The causes that bring about unfavourable results after the use of anti-hog-cholera serum are very definitely known, but that does not prevent their ocurring from time to time, though not as frequently as formerly. It is known that the age of the animal at the time it is vaccinated bears a relation to the permanency of the immunity. It is known that the feed and care of the animal following vaccination likewise affects the duration of the immunity and to a much greater extent than does age. It is known that the production of immunity in an animal heavily parasitized does not follow the same course as in a healthy animal. It is known that hogs vaccinated as they pass though a public stockyard possess a more solid immunity than can be conferred by vaccinating them on the farm.

But, the presence of infectious enteritis (due to *B. suipestifer*) in the herd, although possibly in only a few of the animals and in them unsuspected by the owner, appears to be responsible for more unfavourable results following the use of anti-hog-cholera serum that all other agencies combined. It affects not only the immediate outcome of vaccination, but the duration of immunity in the animals that do not succumb promptly. As the prevalence of infectious enteritis is extending in this country all the time, it creates a serious problem in connection with the vaccination of hogs for the prevention of swine fever.

Some Factors Affecting the Feeding Values of Pastures.*

By J. M. Dickson, M.A., B.Sc.

The subject matter of this paper refers only to permanent grass. The feeding value of any permanent pasture may be said to be dependent on three main factors; these are :—

A. Composition of soil.
B. Climatic conditions.
C. The system of management.

Investigations of pasture problems entail considerable difficulties since they deal with a mixed crop, each member of which is competing with another. It can be said fairly definitely that herbage of any pasture depends entirely on the three factors mentioned, where the pasture has been established for any length of time. It has been shown many times that where elaborate mixtures have been used to seed down a field to permanent grass under any system of management, only a few of these species exist for more than a few years. In this connection it may be said that the modern tendency is to sow much more simple mixtures than was the custom in the past. On many of our best pastures it is interesting to note that only a very few species of grasses are found. For example, in the South Nottinghamshire and Leicestershire areas the best feeding land contains very few grasses beyond Perennial Rye Grass, Rough Stalked Meadow Grass, Crested Dog's Tail, and Wild White Clover. It would, of course, be wrong to say that there are no others, but in many cases these four species constitute 90 per cent. or more of the total herbage. The type of herbage to aim at is one containing a reasonably good mixture of grasses and clovers, and this can generally be achieved by proper management. In the past, we have been taught to assess the value of a pasture rather by its clover content than by its grass content, but examination

* Paper presented to the Derbyshire Division, N.V.M.A., at Derby, on October 14th, 1930.

of pastures of high feeding value tends to confute this idea, and we now realise that to get a high feeding value a considerable percentage of grasses is very desirable.

A. Composition of Soil.

Under the same or similar conditions of climate and management we know that there are very great differences in pastures on different types of soil. For example, the very poor benty pastures on the bunter sand in North Nottinghamshire compare badly with those of alluvial soil of the Trent side, within a very short distance of each other. The difference in soil conditions required to produce quite different pasture is, however, very small; so small, in fact, that the chemist has not yet been able to measure it. To illustrate this I may mention one case of two neighbouring fields on the same farm, managed as permanent grass in exactly the same way for at least three generations. One of these fields (*a*) will fatten big bullocks exceedingly well, but the other (*b*) will only fatten heifers; young stock, on the other hand, did not thrive on the first field, but did excellently on the other. The grass in field (*a*) is said to be " too strong " for young cattle. This brings up the first of our problems. What is meant by " too strong "? It is doubtful whether anyone really fully understands this at the moment, but I would offer the suggestion that as these strong fields are undoubtedly the richest, the trouble with young stock may be a diet too rich in protein, or a diet too rich in nitrogenous products which have not been fully elaborated.

B. Climatic Conditions.

It is a well-known fact that on the same type of soil, and with similar conditions of management, there can be, and are, very different types of pastures. The variation in the same plant under different climatic conditions is in itself a subject of great interest, but I do not propose to go into it here.

C. System of Management.

Under this heading I intend to deal with the various items which are under the farmer's control. The chief of these are :—

1. Drainage.
2. Cultivation.
3. Method of Grazing.
4. The use of Cakes, Farm Yard Manure, Lime and Fertilisers.

1. *Drainage.*—This is probably the factor of most importance in the growing of any crop, and hardly needs elaboration. Inefficient drainage leads to soil conditions of such a kind that it is quite impossible for the better grasses to exist, and a special type of vegetation, generally unpalatable to all stock, is characteristic of badly-drained land. The remedy is, of course, obvious, and may be carried out by means of surface drainage, tile drainage, or mole drainage.

2. *Cultivation.*—The importance of cultivation of permanent grass cannot be over-emphasised. On normally well-grazed pastures its most important phase, often unthought of by the grazier, consists in the " hoof cultivation " of the animals. The beneficial effects of hoof treading are in the main due to its effects on the herbage. Generally speaking, it may be said that only the better quality grasses can stand a regular heavy treading. The poor grasses, and flat-leaved weeds, are so injured in the process that they tend to disappear. Where this type of cultivation is well done, little more is necessary than perhaps an occasional harrowing to spread droppings. On land capable of carrying a reasonably high stock, deterioration of the herbage begins as soon as the stock is reduced, very largely on account of less efficient hoof cultivation. Where this is allowed to go on, a good pasture may be very quickly reduced to one of little value, and the herbage may become of such a type that stock will not face it. Under such circumstances, it may be necessary to resort to other methods of cultivation. This type of deterioration is very common, particularly in large parks which do not lend themselves to controlled grazing. In this connection I might mention Hardwick Park, where the County Authorities have experimented on mechanical methods of improving matted pastures. Severe cultivation with a special disc roller in this case led to a marked improvement in the herbage. Such operations, when necessary, should be carried out in the winter, when the ground is soft, and the implement should be capable of cutting well down into the soil, and even of turning up some soil. In extreme cases of matting the treatment should be drastic, and I have seen bad fields converted into very respectable grazing in one year's time by drastic treatment, particularly when followed by the use of fertilizers.

3. *Method of Grazing.*—Woodman, at Cambridge, and others, have shown that to get the best value out of a pasture, it should be grazed down, and then rested for a period, then grazed again, and the processes repeated. He showed that cutting at :—

	April to October. lbs. per acre.
Weekly intervals gave a total yield of	1982.
Fortnightly ,, ,, ,,	2562.
Three-weekly ,, ,, ,,	3216.

At the same time he showed that there was little, or no, diminution in the feeding value as determined by the protein content up to the three-weekly interval.

	Average weekly cut 1925.	Average fortnightly cut, 1927.	Average 3 weeks cut, 1928.
Digestible protein ...	19·97	18·75	16·66
Digestible carbo-hydrates	36·10	36·50	38·65
Digestible fibre	12·08	13·10	13·64
Starch equivalent per 100-lb. dry matter ...	67·74	69·87	69·39

The fall in protein content in 1928 was not entirely due to the period of cutting, but was due in part to two dry spells which occurred, and during which the protein content fell considerably. It will be obvious from the above that rotational method of grazing will give the largest live weight increase per acre. Woodman's work was done with a lawn mower, but since then confirmatory results have been obtained at Aberystwyth with sheep grazing at intervals of four days, 14 days and 28 days. The four-day period amounted to overgrazing, giving the lowest live weight increase, and had the worst result on the herbage. This overgrazing killed off much of the better herbage, and these plots, consequently, gave the poorest yield in the following year.

3a. *Class of Stock.*—The different habits of different

classes of stock make mixed grazing the most efficient. The natural instinct of an animal to avoid places where its own droppings have fallen tends to make grazing by one class of stock inefficient. Sheep prefer the shorter growing herbage, but cattle are not generally so particular, they like a good mouthful, and will clean up a fair amount of roughage. Interesting figures of this subject are available from Cockle Park, where the manural treatment has been the use of slag alone. On an average of 21 years the live weight increases from similarly treated plots are as follows :—

Sheep alone ... ... 103 lbs. per acre, per annum.
Sheep and Cattle ... 211¾ „ „ „

4. *Oil Cakes.*—It has also been shown at Cockle Park that the use of cake alone is not sufficient to maintain the feeding value of a pasture. It may be said that the old idea of maintaining fertility on pastures, through cake feeding, is definitely uneconomic, and without the use of accessory minerals it almost invariably leads to deterioration of the herbage, and consequent reduction to live weight increase per acre.

Farm Yard Manure.—The use of this material on grazing land is not generally to be recommended, and it should be used, where possible, on arable land, or meadows to be layed in for hay. It is not well balanced as a manure, usually being low in phosphates, and its effect is to stimulate the coarser growing grasses. This results in a smothering of the clovers and the finer bottom grasses. Another point of considerable importance is that stock do not graze well on land which has been heavily dressed with farm yard manure. Where there is no outlet other than on grazing land, it should be applied, as far as possible, at the end of the grazing season.

Lime.—No general rules can be given regarding the use of lime on pastures, and it is usually difficult, if not impossible, to predict a result. At Cockle Park, and many other parks of the country, lime has failed to give an economic return. In other cases it has even given negative results. Generally, it may be said that where slag is used liberally, lime will not, as a rule, give any further improvement. On certain extremely acid soils, however, as on certain parts of the coal measures in Yorkshire, where atmospheric pollution occurs, definite responses to lime have been obtained. Acidity, or sourness, is the name given to certain soil conditions which are by no means well understood. It appears to exist in two main forms; one being the result of a mat of decaying vegetable matter, the other being more or less purely mineral acidity. The former, which is often only surface acidity, can be caused simply by inefficient grazing, and in such cases removal of the mat may remove the acidity. The first form may also be the consequent effect of the second form, and in this case removal of the mat may have to be followed by liming before improvement occurs. It is very seldom that lime in itself will remove a mat; though, as an instance, I may cite the removal of such a mat on poor grassland at Midland College, by waste lime from soap works. There is much less improvement from mountain limestone, and practically no improvement from magnesian limestone.

Phosphates.—The best-known work concerning the effect of phosphates is that done at Cockle Park, where a dressing of 10 cwts. of high grade slag, followed by similar dressings every sixth year, or half this amount every third year, led to a three-fold increase in stock-carrying capacity. The average of the last six years, 1924 to 1929, is :—

Tree Field :—
Plot 6. *Nil* ... ... } Live weight increase per acre, 23¾-lbs.
Plot 4. 5 cwts. slag, 1924 ... } Live weight increase per acre, 106¾-lbs.
5 cwts. slag, 1927 ..

Since the initiation of the above experiments in 1897 by Sir William Summerville, similar results have been obtained in many parts of the country. Slag gives its best results on strong land, and its effect appears to be due partly to the phosphate it contains, and partly to the lime, the latter acting as an interchangeable base in the soil. Since phosphorus and lime are the minerals removed in the largest quantity by the animal, the importance of an adequate supply cannot be over-emphasised. Similar, if not perhaps so striking, results have been obtained by other forms of phosphate, such as superphosphates, bone-phosphates, and more recently by ground mineral phosphates. On the heavier soils the regular use of some form of phosphate seems in itself sufficient to maintain a comparatively high state of fertility, but on the lighter soils, which are usually deficient in potash, the addition of this substance is often necessary before the phosphate can effect its full value. The effect of phosphates is to increase the percentage of clover in the herbage :—

Percentages of Dry Matter.

	CaO	P_2O_5	Na_2O	K_2O	Cl.	SO_3	Fe_2O_3	Protein
Rye Grass ...	·49	·80	·33	3·07	1·15	·99	0·5	16·06
Clover ...	1·44	·72	1·03	2·89	1·05	1·01	·07	22·44

It will be seen from the above figures that, if the effect of phosphate is to increase the proportion of clover in the herbage, it will consequently increase very largely the proportion of calcium, without in any material extent decreasing the proportion of phosphorus.

Potash.—Except on the lighter soils potash seldom shows a direct effect on the appearance of pastures. Whether obtained from the soil, or by actual addition to the soil, its indirect effect is very considerable, and consists in increasing the power of the leaf as a carbohydrate manufacturing agency. The available potash thus has a very important bearing on the feeding value of the herbage. It is particularly important where the nitrogen content of the soil is high.

Nitrogen.—The effect of nitrogen is generally the most obvious. It leads to greater leaf production, and greater bulk of herbage, particularly of the grass, and in the earlier stages of growth it increases the nitrogen uptake of the plant, with consequent higher protein content. As growth continues, the protein content tends to level down to the normal. It may be mentioned here that the leaf is the most nutritious part of the plant, and is higher in both minerals and protein than is the stem. The effect of nitrogen increasing the bulk of grass makes it important on pastures that they should not be allowed to grow too long before grazing; otherwise, clovers and bottom growth tend to get smothered out. It is now well-known that clover growth is dependent very much on light, and in the struggle for existence in a mixed herbage the

prostrate habit of the clovers is a heavy handicap if the top growth is allowed to go ahead too far. According to experimental work carried out at Aberystwyth, it would appear that even under heavy rainfall (56-in.) one can expect a recovery of protein, equivalent to at least 80 per cent. of the nitrogen applied as manure, with monthly grazings. Without the use of nitrogenous manures the protein in the grasses is to a very large extent derived from the clover root development. The use of nitrogen on pastures was generally condemned as bad practice until within the last few years, but the recent introduction into this country of the system of complete manuring and rotational grazing has done much to make us alter our views. This system entails the use of phosphates and potash as basal dressings, followed by a number of nitrogenous dressings during the growing season. It has been shown by this system that it is possible to maintain herbage of a high protein content from very early in the season throughout the season into late autumn. This is in contra-distinction to normal growth, where the protein content follows a curve somewhat as follows :—

It would appear that there is every probability of a very much greater use of nitrogen on grassland in future. The deterrent features apparent at the moment are mainly economic and technical. There is also the question of the state of the nitrogen in grass at different stages in growth, and how nitrogen, in some of its in-elaborated, that is, non-protein forms, affects the living animal. Cases have been reported where animals have behaved abnormally on pastures treated with nitrogen. In one case, at Castle Douglas, cattle appeared to be passing blood and red water was suspected. Investigation, however, showed no parasites, and the presence of complete blood corpuscles with particles of cell wall detritus. This phenomenon occurred fairly regularly, about five hours after grazing had commenced. Chemical investigation of the grass showed a very high content of non-protein nitrogen, amounting to 50 per cent., and the trouble was undoubtedly due to this. This led to an investigation being initiated on the nitrogen content in young grass. Normally, nitrogen-treated grass at three-five weeks' growth, contains about 88 per cent. of protein nitrogen. This investigation is taking place at Jealott's Hill, but sufficient data are not yet available to come to definite conclusions. It would appear, however, that a certain time is necessary for the nitrogen of the manure to become elaborated into protein. This period seems to vary with the time taken to achieve a certain growth, and it would appear that the more rapid the growth, the higher is the in-elaborated nitrogen. Thus, from the practical side, due care should be taken not to stock immediately after a very rapid period of growth. Two other cases of supposed nitrate poisoning with sheep were reported following an application of nitro-chalk. To test this, a lamb was fed with 10-oz. of nitro-chalk in nine days, and its health was in no way impaired. The urine contained large quantities of nitrate nitrogen, but there were no traces of blood. Part of the nitro-chalk was fed in one dose of 3-oz. with no disturbance of health. Another lamb was fed with ¼-oz. nitro-chalk daily for 14 days. It ate its ration containing this and showed no signs of ill-health. It would appear from this that nitro-chalk is in no way harmful to sheep.

The importance of pasture products, and consequently pastures themselves, is so great that one need hardly stress it. It is, however, only within the last few years that any effort has been made to co-relate the work done in the different sections of it. Hitherto, the whole of the work has been done by soil chemists and botanists, but more recently the biochemists and physiologists have been enlisted. The last mentioned " are interested not in pasture as such, but in the effect of different types of pasture on the nutrition of the grazing animal. They are studying the chemical composition of the herbage to determine to what extent this can be co-related with its feeding value." (Orr). This side of the investigation has tended to be centred at the Rowett Institute, while the nutritional aspect of good pastures tends to be centred at Cambridge. Aberystwyth, while mainly tackling the botanical side, has also done some work in co-relating chemical and botanical positions. What I have said hitherto has related almost entirely to what might be classed as good permanent pastures, but before closing I should like to make some reference to the work which has been done at the Rowett Institute. The work of this Institute concerns itself with what might be termed abnormal pastures, that is, pastures on which, on account of some lacking feature, animal growth is abnormal. The main feature in equally bad abnormal cases would appear to be a deficiency of one or more of the mineral constituents. To illustrate this, I append three analyses of different pastures :—

	Very high-grade pastures.	Normal good pasture. Average 24 samples.	Poor pasture (Falkland Islands). Average 55 samples.
Silica-free ash ...	8·68	6·64	4·56
CaO	2·473	1·00	·29
P_2O_5	·997	·74	·54
Na_2O	·698	·25	·31
K_2O	2·398	3·18	2·20
Cl	·498	·95	·70
N.	3·562	2·83	1·95

From available figures it would appear that " rate of growth of the young, percentage fertility, and health, are roughly parallel with the percentage of silica-free ash." In the worst case given above, the figures given were lambs born, 90 per cent., surviving at dipping, 52 per cent. Other figures go to show that there is a definite co-relation between minerals and protein, and that pastures low in minerals tend to be low in protein. It is, however, only in cases where there is an extreme deficiency of one or other minerals that mineral deficiency diseases occur. Thus far, the study of mineral deficiency has been mainly in connection with calcium and phosphorus, but a certain amount of work has also been done on iron and iodine. It is possible, however, that very small deficiencies of other minerals may yet be found to be of equal importance in some cases. I do not intend to go further into this subject, but would refer any one who is particularly interested to Dr. Orr's book on " Minerals in Pasture," which summarises the work which has been done to date.

Discussion.

Mr. J. R. Bond commenced the discussion and called attention to methods of seeding down, stating that new pastures now were generally of greater value than old. He

also drew attention to hoof cultivation in dealing with matted turf and mechanical cultivation designed to lacerate the mat. He thought that there was danger of diseases appearing in stock by the greater stocking of pastures.

Mr. A. Levie raised the question of why soap works lime acted best, and suggested that there might be present some alkaline matters more soluble than lime. He also drew attention to the need for mixed stock on pasture land.

Major T. V. Bagshaw raised the question of hoof culture.

Mr. P. M. Evershed said that there were more and more cases of milk fever and questioned whether this might not be due to lack of lime in the soil.

Mr. E. Wilkinson expressed the view that there was great value in liming to prevent milk fever. On fields belonging to a certain farmer which had had ample dressings of lime there had been no milk fever, whereas there had been many cases on others in the neighbourhood.

Mr. W. J. Ironside called attention to parasitic diseases due to the overstocking of pastures and also mentioned the case of " strong pastures."

Captain O. V. Gunning thought that continuous milk selling might have some detrimental effect on the pastures. He asked why aftermath caused scouring.

In his reply, Mr. Dickson said that a good many of the troubles of strong pastures were due to low fibre content. He had not had much experience with regard to milk fever and wondered whether a wet season might not have a great deal to do with it. Lime was not needed where acid was due to a mat. Certain ordinary fields scoured young stock after a rapid growing time. Aftermath was high in fibre, low in protein and carbohydrates.

Books on Veterinary and Agricultural Science.

We have been sent by Messrs. Baillière, Tindall & Cox their catalogue of books on Veterinary and Agricultural Science and Animal Husbandry, dated October, 1930. This is a most useful catalogue, as not only does it contain a complete list of veterinary books, but it enables one to see what books are issued on other subjects. In order that its scope and intention may be appreciated, we reprint the following from the publishers' notes introducing the catalogue :—

" This catalogue is divided into the following sections :—

Section I.—Pages 1-16.
Veterinary Science, which contains those books of direct interest to the veterinarian.

Section II.—Pages 17-24.
Animal Husbandry, which comprises books dealing with such subjects as breeding and management (including small animals, poultry, beekeeping, etc.), and also books of interest to some extent to the veterinarian.

Section III.—Pages 25-40.
Agriculture, which contains those books of particular interest to the scientific agriculturist and to the research worker.

Section IV.—Pages 41-45.
Atlases, Diagrams and Charts prepared for the veterinary and agricultural student; for those whose work takes them among animals; and in the case of the Atlas of the Ox, for students of meat inspection.

Section V.—Pages 46-48.
Periodicals, which is divided up into Veterinary and Agriculture, and Miscellaneous.

" It is inevitable that there must be some overlapping between the various sections, but it is hoped that, by publishing the above classes of books in one catalogue, an opportunity may be afforded the reader of checking over the books available to him on subjects to which at some time he may desire to refer."

This catalogue is, we are informed, unique and is certainly one which every member of the veterinary profession should have in his possession. Messrs. Baillière, Tindall & Cox will be glad, on request, to send a copy to anyone who has not already received one.

The Veterinary Record.
December 6th, 1930.

The " Tropical Veterinary Bulletin."

We understand that publication of the *Tropical Veterinary Bulletin*, which for a period of nearly twenty years has fulfilled an invaluable function in the quarterly presentation of admirably-prepared and representative abstracts of papers on diseases of animals in the tropics, will cease with the forthcoming (December) number, and that its functions will be absorbed by a journal issuing from the recently-constituted Imperial Bureau of Animal Health.

The *Bulletin* will always be associated primarily with the name of Dr. A. Leslie Sheather, who, for long periods at its inception and prior to its absorption, devoted to its welfare, in his capacity as Editor, those capabilities as a translator-abstractor which have also enabled him to render much good service to the *Veterinary Record.* First appearing in October 1912, under the direction of the Honorary Managing Committee of the Tropical Diseases Bureau (which became the Bureau of Hygiene and Tropical Diseases in 1926), the *Bulletin* was edited by Dr. Sheather until his departure, in June, 1916, to take up the appointment of Director, Imperial Bacteriological Laboratory, Muktesar, when Dr. J. T. Edwards was appointed Editor. The latter's able tenancy of the position terminated in November, 1921, when, upon his appointment to the post vacated by Dr. Sheather, the former Editor returned and resumed control.

While we await with interest the appearance of the journal to be published by the Imperial Bureau of Animal Health, we desire to pay tribute to the untiring and scholarly labours of those who have been responsible for providing the profession, over so many years, with a masterly epitome of tropical veterinary literature.

Tubercle in Animals.

There has been published this week by the Medical Research Council a " Report on Tuberculosis in Man and Lower Animals," by Dr. H. H. Scott (Special Report Series, No. 149, Stationery Office, 4s. net.) The report is based on studies carried out in the Zoological Gardens and in China. Dr. Scott believes that wild races and wild animals are generally free from tubercle, but they suffer immediately if they come into contact with civilization. Dogs and cats, like the wild carnivora, are relatively resistant to tuberculosis. But both human and bovine forms are met with in dogs. Cats do not appear to suffer from the human form, but they may be infected by milk with the bovine form. Birds suffer from the avian form, but both parrots and canaries can be infected by human tuberculosis.

UMI

Eleventh International Congress, London.

August, 1930.

Abridged Papers.

(Continued from page 1087.)

Control of Swine Fever by Immunisation.

By Dr. M. Dorset.
Chief, Biochemic Division, Bureau of Animal Industry, U.S. Department of Agriculture, Washington D.C.

Immunisation offers better prospects of success in the control of swine fever, and is at the same time more practicable than any other method in the United States and those parts of Europe where the disease in thoroughly established and the hog population is large. In these circumstances the application of the slaughter policy is impossible from a practical standpoint, while Sanitary Police measures, though lessening to some extent the prevalence of the disease, are wholly ineffective in controlling sweeping epizootics of swine fever.

The fundamental basis of control by specific immunisation is a highly potent antiserum. It is essential that the production of serum and virus should be subject to Government inspection and these products should be tested for purity and potency before being placed on the market. Their administration should be in the hands of qualified veterinarians only.

The simultaneous method of inoculation can be relied upon to produce a firm immunity which appears to last for life, but it is attended by a certain element of danger inseparable from the use of living virus. Successful results depend upon the use of virus of full virulence, together with ample doses of potent serum. Excess of serum does not affect the resultant immunity, while it affords protection against vaccination losses. The simultaneous method is used exclusively to protect healthy pigs and is the one generally preferred by farmers in the United States. Serum alone is also used mainly as a prophylactic but, in addition, it frequently appears to exert a definite curative effect in the incubative stages of the disease. Its limitation lies in the relatively short period of immunity which follows its use.

In the case of healthy herds which are not in infected districts the use of serum alone is hardly indicated, and it is necessary to consider fully the risks involved before advising simultaneous inoculation. Adequate stocks of serum should, however, always be available in such districts in case of emergency. For healthy herds in areas where swine fever is prevalent, simultaneous inoculation is to be recommended as a general rule, though special cases may arise where serum alone is to be preferred. In infected herds success depends entirely upon inoculation being carried out at the earliest possible moment. Where other infections due to salmonella, pasteurella or swine erysipelas bacteria are also present, the best results are obtained by the use of serum only. In the presence of a pure virus infection, however, animals that are visibly ill or whose temperature exceeds 104° F. should be serumised and the remainder inoculated by the simultaneous method.

The success of the policy of immunisation in the United States is shewn by an almost continuous decline in the losses from swine fever during the seventeen years in which simultaneous inoculation has been practised on a large scale. Under the conditions existing in that country it is not anticipated that the disease can be eradicated by immunisation alone, but the aim is to secure the gradual elimination of losses and thus eventually remove the menace of swine fever. This can be achieved by educating farmers to realise the advantages of voluntarily immunising their herds and by teaching them essential points in matters of sanitation. It is considered that in view of the beneficial results derived from immunisation it is possible to set aside any theoretical objections that may be raised on the ground that the use of virus may be a means of setting up new centres of infection. That this view is widely held by the agricultural community in the United States is shewn by the fact that immunisation is regularly practised in the great swine rearing districts and the farmer insists on the use of the simultaneous method. More than twenty million pigs are thus protected annually.

T. J. B.

Swine Fever (Diagnosis and Inoculation).

By Dr. Med. Vet. Wilhelm Geiger.
Director of the Institute for the control of Swine Fever, Eystrup, Germany.

For a generation swine fever has been a subject for discussion at the International Veterinary Congresses. In 1895, at Berne, differentiation was attempted between swine plague, swine fever and swine erysipelas. In 1899, at Baden Baden, swine plague attained great importance, but swine fever was included with it. In 1905, at Buda Pesth, swine fever came to the fore as a result of Dorset's investigations into swine fever (intestinal disease, *Bact. suipestifer*) and swine plague (pneumonia, *Bact. suisepticum*). Confusion still existed between the two diseases, specially with regard to the symptoms; similar control was considered advisable in both. In 1909, at The Hague, virus swine fever was treated as a matter of vital importance. Serum inoculation was being employed in Europe, simultaneous inoculation was being tried in America. In 1914, in London, Hutyra, in his report, described the simultaneous method.

It is now established that the two most important points with regard to swine fever are diagnosis and inoculation.

Diagnosis depends essentially on clinical symptoms and lesions; the former are, as a rule, not characteristic and diagnosis is practically impossible from them in a small herd, or in single cases at the beginning of an epidemic. The most favourable conditions obtain in outbreaks of acute or sub-acute swine fever in larger herds. A more or less large percentage of the animals show languor and indifference; they put either their heads or their whole bodies under the straw, rise unwillingly, hang the head and tail and soon lie down again; feeding is seriously interfered with; there is a constant rise of temperature, which generally does not exceed 41·5 C. (in contrast to swine erysipelas); later, reddening and swelling of the eyelids and muco-purulent discharge from the conjunctiva. In many cases one sees a scarlet exanthema with petechiæ on the skin from a pin's head to a lentil in size, the ears,

belly and legs being predilection sites; in other cases there are round or square patches and swellings which tend to form crusts and scabs. In early stages the animal is often constipated, later there are frequent evacuations of thin fœtid yellowish-green or bloody diarrhœa. Vomiting is seen where gastritis in present. The breathing apparatus is generally affected, showing nasal discharge, dyspnœa and cough. There are often convulsions and cerebral disturbance, causing unsteadiness of the hindquarters, staggering gait and paralysis. Finally, owing to failure of the heart's action diffuse cyanosis occurs, particularly of the ears, back, belly, and between the hind legs.

If the herd has been ill for some days, then diagnosis may be confirmed by comparing symptoms seen in different animals. Consideration of the epidemiology and etiology is also of great help.

Diagnosis is much more difficult where the disease runs a slow and a typical course. This may arise from the presence in the herd of an unthrifty survivor from a previous outbreak, or of a recently introduced latent case, usually young. Fever is not always present. Constipation alternates with scouring. The animal becomes progressively thinner, the skin is rough, dirty grey and scurfy, the bristles are rough and shaggy. Where the skin is thin there are swellings, later becoming pustular and scabby. Sometimes diphtheritic changes show on the gums, tongue, ears and feet, or there may be nasal discharge, sneezing, coughing and dyspnœa. The animal may become unthrifty without previous symptoms; in that case, immediate diagnosis can be established only by experimental inoculation.

The lesions in acute cases are manifold, in very acute cases negative, consisting of slight catarrhal gastritis, reddening of lymphatic glands, petechiæ on the kidneys. In acute cases septicæmia is evident. There are hæmorrhages on the skin, mucous and serous membranes, epiglottis, kidneys, lymphatic glands, bladder, small and large bowels, rectum, heart and pleura. The alimentary tract may show all stages of inflammation from catarrhal to hæmorrhagic and fibrino-diphtheritic; specially characteristic is hæmorrhagic inflammation at the end of the rectum. Lymphatic glands show a marbled appearance. The spleen is seldom enlarged, but in 30 per cent. of cases shows red-black infarcts at its edge. The liver seldom exhibits macroscopic lesions. The lungs are either unchanged, or show punctiform hæmorrhagic patches, or, in advanced stages, croupous-hæmorrhagic necrosing inflammation, caused by the virus alone. Similar changes often occur in the sheath of male pigs. Pathognostic changes are unknown, therefore lesions in different pigs must be correlated.

In chronic cases the cœcum and colon show various-sized round, concentrically-stratified, yellowish-green to blackish-grey "button," strap-shaped scabs, or diffuse tufted deposits. These are characteristic, but may be absent. Lung lesions, which are commoner than bowel lesions, are generally found in the anterior or cardiac lobes and are friable, macerated and hepatised, brownish to greyish-red in colour. The adjacent pleura is rough, with fibrinous adhesions to the costal pleura or pericardium. In waster pigs, however, often no lesions are found.

All attempts to transit the virus to other species of animals have failed. Also biological methods (complement fixation, agglutination, dialysis, lipoid fixation) have failed. Examination of blood smears shows lymphocytosis and leucopenia, but is of little assistance.

Experimental inoculation of healthy pigs is the last resource. Since at least two healthy pigs, not immune to swine fever, have to be strictly isolated for three weeks, it is a costly, tedious and complicated process. The best results occur with acute cases, which can generally be diagnosed by simpler means. In chronic cases it is often difficult to judge the results, owing to the wide limits of virulence of virus, and to variations in the disposition of inoculated animals. Where the research pigs do not die, it is essential to test their immunity with potent virus, using control animals. In cases of infection with material from doubtfully affected animals, the experiment may be undecisive, owing to attenuation of the virus. Our researches show that artificial infection with a weak virus leads to an immunity which is only very rarely broken down by highly potent virus.

Our experimental inoculations show that about one-third of the infected pigs show inflammation of the anterior and cardiac lobes of the lungs, one-third show enteritis and one-third show both. In nearly half the lung cases it was possible to demonstrate bipolar organisms which, in common with other organisms, play a secondary part, and which cannot cause disease such as swine plague. Isolated cases of swine plague occur, but are rare. A large proportion of the cases of so-called chronic swine plague is really chronic swine fever. Even if experimental inoculation is not always decisive, it is most useful and should always be employed in important doubtful cases.

Positive diagnosis should always be followed by protective inoculation. In Germany a serum has been produced, since 1922, by Uhlenhuth and Miessner at the Institute at Eystrup, in accordance with the work of Uhlenhuth from 1907 to 1914, interrupted by the world war. Its production is based on the ground-work of Dorset and Uhlenhuth and embraces all the subsequent improvements. There are now available large quantities of an immune serum of absolutely high titre which conforms to the requirements of the State control instituted in 1926.

The titre is tested on a lot of 24 stores which are segregated for 21 days and which are examined daily. Eight pigs serve as controls and are infected with virus only; 75 per cent. should die within 20 days. Eight pigs receive simultaneous inoculations; two, or at most three, should be fatally affected. The last eight pigs are not treated at first. As soon as one or more of these pigs becomes febrile a double dose of serum is administered, unless the test regulations prescribe otherwise. The remaining healthy pigs receive a single dose of serum; not more than 25 per cent. of these should die.

In 12 tests the serum conformed to State requirements in the first five, but was not entirely satisfactory. In the remaining seven the improved serum gave excellent results, as follows:—

Fifty-six healthy pigs were simultaneously inoculated. With the exception of two pigs which died in one experiment, no losses occurred. Sixty-three per cent. were febrile for a longer or shorter time; 18·5 per cent. showed slight rise of temperature for a few days, or none. The 54 pigs became absolutely immune.

Fourteen pigs received a double dose of serum in the early stages of the disease; of these, two pigs died and

the remainder sickened during the experimental period and became immune.

Forty-two pigs were given a single dose of serum. Nine died; of the remaining 33, the majority became fevered for some days in the first week, three showed fever in 11-12 days, three showed no rise in temperature. All were immune.

Serum confers for a period of 10-14 days a passive immunity which is not absolute and which can be broken down by virulent infection. If the infection is slight, then active immunity results. Originally we overrated the probability of active immunity following exposure and we therefore favoured serum inoculation only. In general, good results were obtained if inoculation was applied in time, but where the number of healthy pigs was excessive, natural infection did not always take place and the disease started again after the period of protection had elapsed. This necessitated a second costly inoculation.

In the course of time the disadvantages of serum treatment became apparent, owing to virulent infection on the one hand and to the non-appearance of active immunity on the other. Treatment was confined to the absolutely healthy pigs, which called for extra careful examination of the herd, stricter hygienic measures and early slaughter of all ailing pigs. Serum had to be administered so early that some portions of the premises were still free from infection. Most of the treated pigs sickened, some died, others became immune, several sickened at the expiry of the passive immunity. Only in favourable cases was it possible to check the disease immediately with serum injections.

We have therefore applied simultaneous treatment to healthy pigs in a diseased herd. Lasting immunity, with very small loss of life, followed the administration of adequate doses of serum of high titre and highly virulent blood. About two-thirds of the animals showed a rise in temperature lasting some days, followed in the second week by slight languor and inappetence. Of the remaining third, some showed slight rise of temperature without clinical symptoms, others showed no reaction except that of having somehow acquired immunity.

On veterinary police grounds, there could be no question of employing the simultaneous method in other than infected premises, owing to the risk of virus artificially spreading the disease. Further, blood from pigs in the herd itself should only occasionally be used as virus, owing first, to the possibility of mistaken diagnosis, and secondly, to the unknown virulence of the blood.

Simultaneous inoculation in Germany is carried out under varied and difficult conditions. Treatment should be applied as early as possible, but the condition that not more than 5 per cent. of the herd should be infected is difficult to fulfil in practice. One must establish with certainty the number of pigs removed by death, emergency slaughter, sale, etc., whether there was a previous inoculation against swine erysipelas, or what line of treatment was being adopted. Obviously affected animals should be put on one side, and by taking temperatures, the number of febrile, not clinically affected and of healthy, pigs ascertained. The owner must be warned of further possible losses. In order to obtain a highly potent virus which will ensure reaction during the early stages of the passive immunity, great care must be taken, in selecting the donor of the virulent blood, to choose an acute case, with high fever. The ensuing *post-mortem* examination must show that the animal was an uncomplicated case of swine fever without mixed or secondary infections, and that marked lesions such as pneumonia, diphtheritic processes in the bowels, metastatic abscesses were absent. The blood is collected under aseptic precautions during slaughter, defibrinated by stirring with a sterile piece of wood and injected in doses of 1 c.c.

Simultaneous inoculation is applied to the healthy pigs, using a single dose of serum. When economically possible, the dose may be slightly increased, in order to diminish reactions and to protect those animals showing no temperature at inoculation, but nevertheless suffering from latent infection. Treatment must not be applied to lame or recently castrated pigs, or to those with other diseases, specially of the skin or lungs. For the detection of pneumonia, the pigs are driven about after taking temperatures.

In contrast to the serum alone method, simultaneous inoculation does not necessitate slaughter of febrile pigs. It is preferable to give them a double dose of serum. The increased secretion of virus is unimportant. Wide segregation, a difficult matter, often unwelcome to the owner, is also unnecessary. Mixing of animals from different sties is not required. It is desirable to apply a durable mark to the treated pigs in order to judge results later.

After treatment the animals should be fed sparingly on light, digestible food, protected from cold, wet and bad weather, and kept in dry, airy buildings. Disinfection appears desirable. Operations and other inoculations should be postponed for three-four weeks. Persistently coughing or waster pigs should be removed.

In 1927-1929 simultaneous and curative inoculations were carried on on the above lines in collaboration with the Institute at Eystrup on 26 herds, containing originally 2,326 pigs of which 578 were untreated. Of the remaining 1,748, 407, or 23·2 per cent., were killed before treatment and 322, or 24 per cent., were febrile and received a double dose of serum; of these, 140, or 43·47 per cent., died. The 1,019 healthy pigs received simultaneous treatment and 45, or 41·41 per cent., died.

In the autumn and winter of 1929 large quantities of materlal were supplied by the Institute to Dr. Lührs for use in the infected parts of south Oldenburg. Five thousand, one hundred and seventy nine pigs were treated, 1,110 with a double dose of serum. The loss here was only 261 or 23·5 per cent. The cost of treatment was borne almost entirely by the State. The greatest relative losses occurred in young pigs. Simultaneous injections were applied to 4,069 pigs, of which 179, or 4·39 per cent., died. The percentage of deaths in young pigs was 5·44 and in 168 boars and sows 0·6.

In acutely infected herds, therefore, the simultaneous method works best with timely treatment. Active immunity can be conferred by using virus obtained on the spot from an acute case. Curative injections of a double dose of serum in febrile animals is 56-76 per cent. successful.

Conditions in chronic swine fever are more difficult. There is a danger that the virus is attenuated and that it may only start to act after the lapse of passive immunity; or the virus may be completely neutralised by the serum. In both cases the disease may start again. If the disease is confirmed in a laboratory by experimental inoculation,

then the virus of the inoculated animal, in cases where transmission experiments show it to be virulent enough, can be used. Otherwise it appears advisable to employ a virus of high titre from an Institute. In chronically infected herds treatment should be applied in conjunction with an expert.

Chronic infection occurs most often in breeding herds. Adult animals can be actively immunised irrespective of subsequent breeding losses. No pregnant sows aborted, the pigs were generally born healthy, but died at about three-four weeks. Later litters as a rule grew up. Losses of the pigs might have been decreased by the use of special pigging sties and by the repeated administration of serum. Simultaneous treatment was not applied to sucking pigs, since they rarely achieved active immunity.

Wasters seldom resulted from the simultaneous method. The danger of causing carriers which could cause reinfection appears to be slight, according to recent experiments, as yet incomplete.

Animals unsuitable for simultaneous inoculation are those which, while presumably healthy, are suffering from some latent disease such as pneumonia. Such pigs do not require immunity, but generally sicken in two-three weeks and nearly always succumb to swine fever complicated with pneumonia.

For success in simultaneous inoculation, the chief points are :—

(1) Early recognition and inoculation.

(2) Inoculation of only absolutely healthy, non-febrile animals.

(3) Virus of high titre without secondary organisms.

(4) Hygienic treatment of inoculated animals; disinfection of premises.

(5) Accurate marking of inoculated animals.

Under these conditions the method promotes systematic recovery, which speedily leads to active immunity, with few losses. It gives effective support to veterinary police measures.

H. H.

Swine Fever (Diagnosis and Inoculation).

By Dr. Wilheim Nusshag.

Berlin-Frohnau.

Prompt and certain diagnosis is the basis of the control of swine fever. Diagnosis is not difficult during the acute stages of the disease, but it is seldom certain before a *post-mortem* examination of at least one affected animal. Hæmorrhages of varying size are then usually seen in all organs, and as these occur in no other disease of the pig, the diagnosis becomes definite. Epizootics of swine fever come in waves. An outbreak of the acute disease is usually followed by the chronic form, especially attacking the young animals. The differential diagnosis of this form from many so-called " breeding diseases " is very difficult and almost impossible clinically or anatomically. Suspicion is strong when there is a high mortality in the third to fifth weeks of life, especially when hæmorrhages are detected. The only means of confirming the diagnosis is by transmission experiments with susceptible pigs, but even this may not be conclusive.

The inoculation of serum is of established value against swine fever and is, in the opinion of many, the only means of preventing losses on pig farms. Unfortunately, it does not produce a lasting immunity. Lasting protection can be secured by simultaneous inoculation, which, when skilfully effected is associated with relatively small losses. This method is of little value for sucking pigs. The chief problem in the control of swine fever is the removal of the infected pig farms which act as a focus for the spread of the disease.

W. R. W.

Clinical and Case Reports.*

Paralysis in the Dog.

By A. Spicer, F.R.C.V.S., Oxted.

Within the last two or three years, quite a number of cases of paralysis have occurred in dogs in my district. There has been no history of any injury and nothing to account for the trouble.

The most serious case I have encountered was in a Pekingese, which slept in his owner's bedroom. He started crying out quite suddenly, rolled out of his basket and struggled about the room, showing evidence of great pain; by the morning he could not use his hind legs and later on dragged them behind him.

Other cases start with a fairly high temperature, severe and prolonged panting, with evidence of considerable distress and weakness in the hindquarters; this weakness progresses more or less rapidly until, within two or three days, the dog is completely paralysed behind.

One sees the condition in all stages, the subjects of the mildest forms merely showing a great objection to going up stairs. These mild cases usually pass off without any treatment. The more severe ones are usually put down to and treated for rheumatism. Some recover and others gradually get worse, but in the severer forms, where weakness of the hind legs and paralysis set in at once, this does not answer and the patient goes from bad to worse.

What is the cause of this complaint? McDonagh would put it down to dehydration of the protein particles, but one would think there must be some special cause which starts the dehydration and sets up this train of symptoms.

The question that arises in my mind is—do dogs suffer from acute poliomyelitis? It seems to be increasingly prevalent in the human subject, and one wonders whether it is becoming pathogenic for dogs. The serious case mentioned above, belonged to the Matron of the local Cottage Hospital, and was seen by quite a few doctors, and all suggested acute poliomyelitis. The symptoms certainly seem to correspond with those seen in man. Apparently, the germs of this disease can be dormant in

* Cases presented to the South-Eastern Division, N.V.M.A., at Tunbridge Wells, November 5th, 1930.

the system, waiting till something weakens the resistance of the individual, thus allowing the germs of acute poliomyelitis to get the upper hand, with the accompanying loss of power and paralysis.

Something of this kind would appear to have happened in those cases in the human being where the disease has followed vaccination against smallpox.

Treatment.—Fortunately, if proper measures are taken at an early stage, the trouble can be stopped practically at once. An injection of normal saline gives relief very quickly and may be repeated if necessary in two or three days. Aspirin helps to bring the temperature down.

Trouble arises when paralysis is coming on or is complete before the patient is put under treatment. When it is only coming on normal saline will arrest its progress, but the difficulty is to get the patient back to normal. A writer in the *Veterinary Record* gave a very glowing account of results obtained with Aricyl, but so far I have not had good results with it and was rather at a loss to know what to try next until I made a trial of "Hormonigen." This, you probably know, is a preparation in tablet form made by Hewlett's, and contains thyroid, pituitrin, orchitic and ovarian extract. I have treated patients in all stages of the disease with these tablets and so far the results have been most satisfactory; so much so, that now I always combine the normal saline and glandular treatment, directly a case of this description is brought to my notice, without waiting for any sign of paralysis.

Discussion.

Captain F. C. Gillard asked Mr. Spicer if he had had good results from the treatment of such cases as he had described by high frequency. He himself had had varying results; at times the cases had responded well; at others, high frequency treatment appeared to fail completely.

Mr. Spicer replied that he had not made use of that method of treatment.

Mr. Gillard, proceeding, said that he had also tried to use the ordinary ironing iron; he had had very good results with that, in some cases.

Major L. P. Pugh propounded the view that there was a possibility that Mr. Spicer was dealing with two conditions which, clinically, were much alike. In some cases in which there was acute auto-intoxication, recovery would ensue if one gave high frequency, and the recovery in those instances did seem to come about much more readily if one administered thyroid extract; in other cases, that did not recover, he believed they belonged to the peripheral neuritis group, of which poliomyelitis was one. Therefore, even if it were perhaps only splitting hairs as to the condition, he thought that those cases that did not recover were really due to the nerve disease, whereas those that recovered under hormone treatment belonged to the auto-intoxication group.

The President (Mr. Henry Taylor) enquired if Mr. Spicer gave large doses of normal saline.

Mr. Spicer replied that he gave 150-200-250 c.c. Answering Major Pugh, so far, none of his cases had failed to recover; the results of treatment of his last twelve cases had been truly remarkable. None of his cases, moreover, had shown any signs of constipation; the bowels had always acted quite freely.

Captain J. Bell said that he thought that, with regard to Mr. Spicer's last remarks, the normal saline might have something to do with the activity of the bowel, though, in his experience, there was always a great difficulty in getting the bowels to act as steadily as one would like. In this condition, it was impossible to give aperients by the mouth, because one so easily upset the stomach, and it had always been his method to keep the bowels open by enema.

As to mortality, he had had a good many cases in the last ten years, and they usually responded well to treatment, though he had not had much success with high frequency treatment.

Captain J. H. Mason observed that he failed to follow why the subcutaneous injection of normal saline and the administration of hormonigen should be associated in treatment; they seemed to bear no relationship to each other.

Mr. Spicer replied that he feared he had no information to give in regard to that point. They had to admit that in some cases they were prone to try very many things, possibly merely because they had been suggested, or suggested themselves to one.

Major Pugh remarked that he thought there was some connection, because saline, given subcutaneously, must be eliminated by the body and would wash out toxins, while thyroid was recognised as one of the most important agents in the correction of toxæmias of the bowel.

. . . . .

"Infantile Scurvy" in Young Dogs.

By L. P. Pugh, B.Sc., F.R.C.V.S., Sevenoaks.

I venture to bring forward three cases of what I think are the same condition—cases of so-called "Infantile Scurvy" in young dogs.

Infantile scurvy was originally described fully by Sir Thomas Barlow. Young children affected with the condition exhibited excruciating pain in their legs, and until the pathology of the disease was found out they almost always died unless their dietary was altered.

Sir Thomas Barlow demonstrated that the cause of the condition was a lack of vitamins, a lack which he overcame by giving fruit juice. Pathologically, the lesions were hæmorrhages in the periosteum, chiefly of the long bones of the limbs, but in one case there were very acute hæmorrhages into the mouth.

The first case I saw was brought in—a puppy, which for several weeks had been exhibiting extreme irritability. After a certain amount of handling I found that there was a swelling, down one femur, which was extremely painful. A similar swelling appeared later on the other femur. I suggested at the time that it was some infection, but I thought that before I put the dog down I would cut down on the area and see what the condition was. I did so, and when I cut down to the periosteum some clear, hæmorrhagic fluid came away, but nothing else. The same thing happened on the other side. The following morning the puppy was running about, perfectly well, and I sent him back, apparently cured. In a few days' time, however, the puppy came back, the pain having reappeared—in the fore limbs, this time.

It then struck me that the condition might be similar to infantile scurvy, and I put the case on to fruit juice, three times a day. The animal recovered in ten days from that date.

The next case was in an Alsatian puppy with a similar history, except that it was showing signs of rickets as well; it had a spontaneous fracture of the femur on both sides, and I advised destruction. I diagnosed infantile scurvy, going on the former case. On *post-mortem* we found extravasations on the periosteum of nearly all the bones, including both rami of the jaw.

The third case I saw a fortnight ago. A dog came in on the Friday evening with acute pain in the hind legs

and the doughy swellings which I have described. We put this dog on fruit juice and the puppy, although on the Friday seemingly paralysed with the pain, was running about on the Monday and went home on the following day, apparently cured.

In all these cases the puppies had been reared on condensed milk and puppy meal, and had had no chance to get at any uncooked meat, or at any grass—which I think the average puppy would protect itself by eating.

I bring these cases forward because the recovery in each was so dramatic, and because it is very satisfactory to know that, just by the addition to the dietary of a little fruit juice, such striking recoveries can be brought about.

Discussion.

Captain F. C. Gillard enquired if Major Pugh had been able to ascertain whether any other puppies in the litters were similarly affected.

Major Pugh replied that, in the first case, there were two puppies and both were brought up on the same dietary, but only the subject of his case showed any symptoms.

. . . . .

Bowel Protrusion after Accident: Successful Return in a Dog.

By C. W. Perrin, M.R.C.V.S., Folkestone.

When our Secretary wrote giving me the date of our meeting, and asking whether I could present an interesting case which I had recently met, the following surgical case occurred to me as a subject which might prove of interest to this meeting:—

Subject.—A cross-bred male retriever dog, aged six months.

History.—Late in the evening, September 1st, a motorist called informing me that he had run over a dog, and wished me to attend to the animal. I asked him to bring the dog indoors. A lady then arrived with the dog on a leash.

The small intestines were protruding through a wound in the right flank, and the mass amounted to about the size of a cricket ball. The dog was snapping at his intestines.

He had chased a puppy off the pavement, and ran in front of the car, which hit him, causing the injury.

I explained to the owner the gravity of this injury, and asked whether she wished me to try to save the dog's life, or have him painlessly destroyed. The owner said she wished him to be treated.

Having impressed on my client that the dog would require very careful after-treatment, I asked her to leave the animal with me, and come back in two hours' time.

It was very unfortunate that, at the time of this accident, I was in the house alone. The dog was only just inside the surgery, when the telephone bell rang; this was a call to put a dog to sleep as soon as possible. I had to explain briefly that I was unable to come at once.

On my re-entering the surgery the dog was running round the room. A mass of intestines, about the size of a cocoanut, was now protruding from the flank. They were commencing to show signs of inflammation, and I noticed that foreign matter was adhering to them.

I tied him to the leg of the operating table, and administered Elixir chloretone, dram 1, in about one dram of water, in the hope that this would have a sedative effect, while I was preparing for the operation. The dose was too small and had no effect, and I learnt from after experience that this dog could take large doses of sedatives. The next step was to sterilize suture material, cotton wool swabs, and instruments.

The dog was fixed on the table in the left lateral position, and chloroformed with Hobday's mask, chloroform being poured on cotton wool at the end of the mask. He struggled violently and took a large quantity of chloroform before anæsthesia was produced. The intestines were coming out rapidly all the time at each struggle; they were now dark red in colour, and covered with several ecchymoses. By the time that anæsthesia was complete nearly all the intestines were hanging out of the abdominal cavity. I thoroughly cleansed my hands with warm water, lysol and ether soap. The intestines were cleansed with warm chinosol lotion, and returned to the abdominal cavity by surrounding the bowel with a swab of cotton wool wrung out in warm chinosol lotion, and pushing it gently through this.

After returning the intestines, they were kept in position by inserting a warm sterile pad of cotton wool into the wound. The hair round the wound was then clipped away, and the surrounding area cleansed and rendered as aseptic as possible.

The dog showed signs of returning consciousness several times, which necessitated the cleansing of my hands each time after giving more chloroform.

The muscles were sutured with six interrupted silk sutures, No. 6 size, the panniculus and subcutaneous tissues with three sutures of the same size, and the skin with four silk sutures, No. 9 size. The wound was cleansed and dried, painted with Tr. iodi., Vetoid ointment applied, lint, cotton wool and a 3-in. bandage fixed and held in position with safety pins.

On removing the mask, the dog soon regained consciousness. He then vomited a kidney-basin-full of fæcal ingesta. He was now very collapsed, with a scarcely perceptible pulse. Things looked rather hopeless. 1 c.c. camphor in oil was given hypodermically.

I now had to rush off to the case which was waiting. Instructions were left that 15 drops of brandy were to be given in a teaspoonful of white of egg in two hours' time and 10 drops of brandy in same quantity of white of egg every two hours during the night, the animal to be wrapped up in a clean towel, and a hot-water bottle to be placed under his bed, he was to be kept warm and quiet.

September 2nd.—On visiting the patient next day at 9 a.m., to my great surprise he was fairly bright. The temperature was 101° F., the pulse regular. At midday the dressings were removed, the wound was dry and appeared healthy. It was dressed with Santiform lotion, Vetoid, lint, cotton wool, 3-in. bandage applied. Temperature 101° F.

A liquid diet of Benger's food in small quantities every 2½-3 hours was ordered, albumen water and brandy two to three times a day.

September 3rd.—Dressed with chinosol lotion, etc. Temperature 101·6° F.

September 4th.—Dressed as on the 3rd. Temperature 100·2° F. The sutures had torn out, and the animal had been left alone for some time and had disturbed the dress-

ing. A sedative tablet was given (Aspirin gr. iii, Phenacetin, Pulv. ipecac. co. aa gr.iss.

September 5th.—Dressed with Chinosol lotion, chloretone co. ointment and bandaged, tablet Neuritis co. given and chloretone capsule, gr.i, in evening.

September 6th.—Wound resutured, chlorocain used as a local anæsthetic, Aspirin gr.x was given. Temperature 101·8° F.

September 7th.—Dressed morning and evening. Aspirin gr.x given in morning and Elixir chloretone, dram 2, in par. liq. given in evening.

The wound was now open again. I decided to treat it as an open wound.

September 8th.—Dressed, Elixir chloretone m. xc. in par. liq. ʒ ii given.

The dog had to be boarded out at this date, owing to illness of the owner.

September 9th.—Dressing. Ditto, *10th*, *11th*, *12th*, *15th*, *17th*, *18th*, *20th*, *22nd*, *25th*, *29th*, and *October 2nd*.

Chinosol lotion, Vetoid, or Tolid, and sedatives after each of my dressings.

The wound was now almost healed, but there was a sinus about 1½-in. in length, and the diameter of a lead pencil. I had intended opening up the wound, but had to put this off owing to pressure of work. I suspected that a buried suture was causing the trouble.

October 7th.—I had the dog brought to my surgery; the wound was cleansed with germicidal soap, chlorocain injected, opened up and a buried suture removed, curetted, the muscle sutured with three silkworm gut sutures, and the skin with four silk interrupted and a continuous silk suture. Dressed and bandaged, Elixir bromide and chloral co., m.xc, given and he was sent home (to the boarding home).

I think that the wound should have given no further trouble if the dog had been properly watched.

October 8th.—The bandage was soaked with urine when I made a visit. Wound was dressed.

October 9th.—Dressed; *10th* dressed, sutures removed.

October 11th; 13th, 15th, 18th, and *21st.*—Dressed with chinosol lotion, Vetoid, Tolid (alternated) and bandaged.

October 23rd.—There was now only a small abrasion. This was cleansed with chinosol lotion, dryed with cotton wool and ether, painted with Tr. iodi. and then with flexible collodion; wound powder, cotton wool and bandage applied and a chloretone capsule, gr.x, given.

October 27th.—Wound quite healed, but small abrasion present, due to bad bandaging at the home. Was cleansed with chinosol lotion and chloretone co. ointment applied. The dog went home on this day.

The diet after the first fortnight consisted of lean raw meat, with small quantities of Benger's food, then boiled fish, and he was gradually put on to normal diet.

The points of interest in this case were that at no time after the first day was there any illness, the extreme activeness of the animal, and the impossibility of keeping him from interfering with the wound—I think this was the cause of the suture, which I later removed, giving trouble.

I expected that peritonitis would supervene, or that he would die from shock after the injury.

Retention of Urine in the Dog.

By J. Bell, F.R.C.V.S., Catford.

My object in bringing to your notice two cases of cystitis is largely to induce a discussion upon a subject sadly neglected in veterinary literature. This was probably excusable thirty years ago, when the majority of veterinarians were principally engaged in equine and bovine practice, as these herbivora are rarely affected, except traumatically or by the action of poisons. To-day, conditions are different and our canine and feline patients are frequently the subject of cystitis, when they cause much worry and anxiety.

On October 3rd, I was called to a dog which was said to be in great pain and had not passed water for 36 hours.

Upon arrival, I found a Collie dog, about five years old, *in extremis*. The abdomen was much distended, which at first glance caused me to suspect hydrops abdominalis, but a more careful examination revealed a greatly distended bladder, and the animal dying from uræmic poisoning. While still examining by palpation, although the pressure of my fingers was very slight, I distinctly felt the bladder wall collapse and the abdominal distention disappear. I then suggested putting the dog to sleep, as it was in a hopeless state, and in about half an hour this was agreed to and carried out.

Later I made an autopsy, when we found the abdominal cavity full or urine and the bladder ruptured, about two inches, across the fundus. The organ was almost black in colour and its walls fearfully attenuated. The kidneys were congested and showed cloudy swelling.

This case brought to mind a similar case which I met about ten years previously, where there was great distention of the bladder accompanied by cystitis, causing me to be on the alert. Since then I have encountered many cases of cystitis in dogs and cats and find them a great source of anxiety.

From pathological examinations in each case, *B. coli* and streptococci were found in large numbers, sometimes one preponderating and sometimes the other, but as these are frequently found in the cavity in perfect health we must presume that an injury is primarily essential to provide the nidus necessary for their assumption of pathogenicity. In my opinion, the injury caused by protracted retention of urine—such as we sometimes get when an animal has been confined to a house over a long period—is sufficient to inaugurate the condition.

The next case which I will describe is more in accordance with what we usually meet. During June I was called to a Sealyham which was very sick. I found the dog in a febrile state, frequently urinating a few drops and crying out. He had been sick eight times in 24 hours.

I gave bismuth and chloretone to counteract the emesis and only allowed teaspoonsful of water and lime water. The following day sickness had ceased but so, also, had urination. It became necessary (36 hours later) to resort to hot fomentations posteriorly, enemata and massage, which succeeded eventually in emptying the bladder by degrees. During the next few days, Soda bic., and Soda sal. were the chief drugs administered and the food restricted to barley water and lime water, and milk and lime water, in small quantities, for a week. Hexamine

was also administered. Another week was taken to get back to normal food.

In this case no blood was passed with the urine, but from my experience the presence of a few drops of blood need not cause alarm, as I have had animals exhibiting them recover; also, I have had some of those not showing hæmorrhage, go wrong.

Vomition is a very usual symptom and one apt to mislead—a point in regard to which I should like to hear the experiences of other members.

Discussion.

The President (Mr. H. Taylor) enquired if there was no question of calculi in the cases described by Captain Bell.

Captain Bell replied that he had rarely met with calculi, though the many cases of cystitis he had seen had been due to different causes—enlarged prostate and stricture had been the principal causes of the retention of urine. In the female he found the use of a cystoscope as employed in children to be of great service; having passed the catheter, insert the small tube containing the electric bulb. It was very interesting to observe the various conditions of the mucous membrane by its use.

Captain F. C. Gillard observed that many of his cases of hæmaturia and cystitis had been due to the presence of calculi. In one, that of a Labrador, the dog had for many months been passing large quantities of blood, but every examination he had made had been negative so far as the presence of a calculus was concerned; the use of X-ray revealed nothing, though there was a distinct swelling in front of the pelvis. An exploratory laparotomy showed the presence of two large masses of fat on the bladder. He removed them, and found they were both four inches long and of the calibre of a very large sausage. The patient recovered from the operation for their removal, but was still passing blood. He castrated the dog, and he had never passed any blood since. At times the Labrador had vomited, but only at very long intervals, and he could not say that the vomition was due to that condition. In females his cases had nearly always been associated with the presence of calculi.

The President said that he remembered an outbreak of Stuttgart disease some years ago, in which the first symptom exhibited was an inability to pass urine. The characteristic lesions in the mouth developed about a week afterwards.

. . . . . .

Cystic Calculi in a Sealyham Bitch.

By S. F. J. Hodgman, M.R.C.V.S., Beckenham.

A Sealyham bitch, aged about two years and very fat, was sent to me with the following history:—

For about a month the owner had observed that the bitch, after passing urine, sat and strained as though she had not finished. There was apparently no actual difficulty in urinating; in fact, there was always quite a flood. If taken for a walk, the first thing she did was to pass water and then sit and strain every few yards. I enquired about the passing of any blood after urinating, but this had not been observed, neither was there any history of hæmaturia.

I naturally suspected a calculus, but could not palpate it by rectal or abdominal examination.

A sample of urine was taken and examined, but this did not help me in my diagnosis. To be more certain of my ground before suggesting an operation, I had an X-ray taken, but although the photo was quite a good one, no sign of a stone in the bladder could be seen. As a result of this, I asked my partner, Mr. Cornish-Bowden, to have a look at the bitch for me.

At about this time we received a further history. The bitch had apparently had a very difficult whelping, followed by metritis, about a month before the onset of the above symptoms.

My partner agreed with me in my diagnosis, but suggested that there might be some infection of the vagina, as the result of the metritis, causing a certain amount of irritation. I examined the vagina carefully, but could find nothing to account for the trouble.

I then decided to take another sample of urine and seek the advice and help of Mr. Dalling. He very kindly examined the sample for me and got a pure *B. coli* culture from it. This made me feel more certain than ever of the presence of a stone or stones in the bladder. Mr. Dalling told me that the infection was in the bladder, therefore we decided to try an autogenous vaccine before resorting to an operation. This vaccine Mr. Dalling made for me, and it was given subcutaneously every four days for about a month.

However, the condition became worse. At about this time blood was seen after passing water, just a drop or two. With the consent of the owner I decided to operate and found five stones. The bitch has been home now for just over a month and is apparently doing quite well. The interesting facts in the case, to my mind are:—

(1) The lack of hæmaturia or of blood after urinating, until right up to the very last. The bitch had been straining for about four months before blood was seen.

(2) The ease with which she passed water.

(3) The lack of evidence as the result of X-ray. This latter suggests that the calculus was formed of uric acid, which does not throw a shadow.

[Mr. Hodgman also gave a brief recital of a case of intussusception of the duodenum into the stomach in a four-months-old Pekingese pup. The stomach had not pouched over the duodenum.]

. . . . . .

Endocrine Aberrations: Beneficial Effect of Castration.

By F. C. Gillard, M.C., M.R.C.V.S., Folkestone.

The subject of this case was a rough-coated fox terrier dog, aged four years and nine months. I first saw him when he was brought to me because he was very dull and disinterested in life. He was losing his coat, especially on his hinder parts. This went on, in spite of the administration of thyroid with which I started, and his skin became very irritable. I prescribed ordinary lotions, to alleviate that irritability, but he gradually got balder and balder, until he had practically no hair at all, and where he had any it was of a fine, silky texture.

I saw the dog at one or two intervals over a period of three months and I then asked if there were any other symptoms, and if he was getting a nuisance. The reply was that he was being chased by every dog in the place. The dog, in fact, had the characteristics of the opposite sex.

The dog was getting very much worse, when I noticed that his testicles were very low in the scrotum, that the

perineum was getting almost bulbous and that the glans penis was also very swollen. I syringed the prepuce, as there was a little discharge, with various antiseptic astringent lotions.

It was a very interesting case to me, and I pushed all sorts of glandular products into the animal, but without achieving any beneficial result. I then saw that one of the testicles was altering in shape; it became larger, and distinctly tumefied. I removed that testicle, and within a few weeks the dog began to improve out of all knowledge. Within two months he was an extraordinarily different animal; no other dogs worried him at all, the other testicle seemed to ascend, the skin irritation subsided and the hair grew vigorously, and within five or six weeks he had the most profuse growth of coat one could wish to see on any dog. During the past summer, since then, he has been swimming in the sea and for as long as half-an-hour at a time, which was a habit that he had when he was younger. The period during which I attended the dog was from March of last year, when he was four years and nine months old, to about a month ago, when he was a wonderfully transformed animal. The dog has a rather interesting breeding history. The dam was mated to her own son by accident and this was one of a litter of five; I have not met with the other four.

I have had another case on very similar lines, but the subject was an old dog (10 years) and had a bad heart, so that nothing was done in the way of operation; otherwise, I would have castrated him. I would very much like to hear if other members have had similar experiences to those I have related.

Discussion.

Replying to the President, Mr. Gillard said that he regarded some endocrine trouble as the cause of the condition. He treated with glandular products but, although at the time he imagined that some benefit was resulting, there was no lasting good effect until the testicle was removed. He had had three cases in all, but the first was a long time ago.

Major L. P. Pugh said that he observed a similar case, three years ago, in a dog belonging to Dr. Crawford, of Sevenoaks. The first thing of which they complained was that the dog had so many admirers, but he became hairless and also had a tumour of the testicle. He tried a number of biological products, but the animal was eventually put down.

Steinach, in one of his papers on vaso-ligation, states that dogs that were the subjects of that operation immediately had a large growth of hair, therefore he attributed the hairlessness to old age.

. . . . . .

Coat Changes Following Ovario-Hysterectomy.

By F. C. Gillard, M.C., M.R.C.V.S., Folkestone.

The subject of my next case was a Cocker spaniel of the opposite sex. I saw her on September 26th, 1928, when she had a vaginal discharge. I gave her a douche on that day and for several days afterwards. I then decided that the case was getting worse and that it was one of pyometra. Accordingly, I operated, doing an ovario-hysterectomy, the uterus being full of pus. She made an uneventful recovery. It was on October 23rd that I did the operation, and the last time I saw her that year, to remove a small suture I had left, was on November 13th.

I met with the case again on June 4th, 1929, when I went to see her for a different matter altogether, but which had obviously something to do with the loss of organs for which I had been responsible. She was a black Cocker, but when I saw her on June 4th I found her lips turning grey, and the nose and eyelids were losing their pigment. This condition gradually became very marked: the greyness gave way to a slate colour and then white hairs began to appear on the lids, round the nose, and on the ears and feet. The coat had become more like the hair of a French poodle—very long, but without any curl in it. I treated her with thyroid and then I used the mixed gland products, but all to no purpose. She became greyer and took on some gingery markings; she also got very fat. On April 13th of this year I thought I would do an ovarian graft. I had a suitable spaniel at that time which had to be destroyed, and I made use of this bitch to make a transplantation of both ovaries. Both grafts took very well, but the improvement was only transitory.

What was the cause of those unfortunate sequelæ? Were they due to sepsis at the time of the performance of ovario-hysterectomy? I do not know, nor whether it might have affected some endocrine gland. Upon that point, I would appreciate the opinion of the members.

Discussion.

Mr. J. W. Pritchard observed that he had noticed that the coat of the Flemish stallion, after castration, changed from a sleek black to a rusty red.

Mr. J. K. Bateman asked Mr. Gillard if he made any effort to crush the ovaries before he transplanted them. He asked that question because, on a recent occasion, he himself was told that he should have done so, and that he could not expect to get good results as he had omitted that process.

Mr. Gillard, in reply, said that he did not crush the ovaries, and he well remembered that both swelled up to the size of a walnut after transplantation.

Major Pugh suggested the subcutaneous injection of ovarian extract in such cases. In his experience, none of the glandular extracts were of much use if given by the mouth.

. . . . . .

A "Problem Case" in an Alsatian Bitch.

By F. C. Gillard, M.C., M.R.C.V.S., Folkestone.

The subject of my next case was an Alsatian bitch—a big winner and very well known, but which always had been slightly under-sized. She was about four-years-old, and at times her owner had been a little nervous about her because she did not seem to be enjoying life as she should. This year the owner became more anxious, as the dog had shown a little lameness from time to time and had cried out once or twice as though in a little pain, but these symptoms were attributed to rheumatism.

No treatment was carried out until July, but by the end of that month she was obviously requiring a good deal of attention. It was then suggested that, owing to some emesis which she had had at different times and pain, the site of which no one could discern, X-ray might be of some use. She was X-rayed on July 30th, but it revealed nothing. I saw her next on October 3rd, in consultation with Mr. Cattell. She had been very sick the night before, although she had eaten her dinner, and was obviously ill next morning, when she was in a great deal of pain in the right shoulder. There was a suggestion that she had jumped over a wall and might have injured

the shoulder. The leg was obviously shorter than the left leg, and she could not bear to extend the limb, or to abduct it.

These symptoms had, of course, no connection with the emesis. On the following day she was more or less her normal self, except for the right shoulder trouble.

On October 5th she was not so well; temperature 102·2°, and she was X-rayed, but with negative results. I took some blood with the idea of examining for leucocytosis, and making other tests, but we got no further with that, as I was, unfortunately, called away, just after adding staining solution, and the smears were spoilt. She became much worse, and on the 13th she was very ill indeed. On the 14th she was yet worse. Her temperature varied between 104° and normal. Respirations were at times very rapid, then more or less normal; she was in a lot of pain and her hind limbs were very œdematous.

She became prostrate and, in spite of all that was done for her, she died on October 16th.

I would like any of you to ask any questions you like to help you to diagnose this case, without telling you what the *post-mortem* examination revealed. Her pulse rate and respirations were often very rapid, but they would then settle down to normal. I will tell you the result of the *post-mortem* afterwards, and you shall see something of what was found.

[Various members made suggestions as to diagnosis.]

Post-mortem.—I made a *post-mortem* within a short time of death, and the first thing I noticed was purple discoloration just over the bladder, where there was localised peritonitis. I found huge enlargement of the sub-lumbar lymphatic glands: they measured five inches by four, and were two-and-a-half inches thick. This was on the inferior surface of the posterior aorta and vena cava and was responsible for the œdema of the hind limbs, and the enlarged glands were absolutely glued to the spine, compressing the vessels mentioned. The mesenteric glands were normal, the spleen was very much enlarged and weighed two lbs., while the kidneys were also affected. The liver weighed three lbs. and one ounce, but appeared normal, except that it was a little friable. The heart was obviously very enlarged, but showed no lesions. The lungs were normal, but the bronchial and mediastinal glands were enormous, presenting the same appearance as the sub-lumbar glands. On the right side of the axilla was an enlarged gland. I cut down on to the shoulder, but could see no changes in the bones, nor was there any inflammation round the shoulder joint; in fact, there was nothing abnormal there. The suprasternal glands and the supra-axillary and cervical glands were all normal.

* * * * *

Bacterin Treatment of Swollen Neck in a Cart-Horse.

By J. W. Pritchard, M.R.C.V.S., Brighton.

Subject.—Cart gelding, eight years' old, 16·1 hands, now in good condition, weighing about 16 cwt., and in regular work.

History.—My attention had been called to the horse—that he was subject to small abscesses in the region of the withers, which matured quickly and interfered little with his working.

The condition at the withers having become localised and acute—a case of ordinary fistulous withers—on December 19th, 1928, I operated upon him, giving good vent to the contained pus, and with daily attention afterwards good improvement was made.

There being still a slight discharge from the operation wound, and in view of the previous history, I injected him on January 3rd, 1929 (a fortnight after operating) with the solution of one tabloid containing 12,500 million killed equine strepto-staphylococcal bacteria, with the object of stimulating the repair cells and bacteria.

Two days afterwards I was summoned urgently to the horse, he being desperately ill, having a high temperature (106°), increased respiration and pulsation, with enormous swelling of the neck and withers, presenting every symptom of acute septicæmia.

The horse gave me much anxiety, but after several operations upon the contained purulent sinuses, and with general treatment, he recovered and was able to return to work by February 13th. He continued in regular work until November 27th, when he had to be stopped because his neck had again become very swollen and stiff.

Physic and alterative medicines were given, but he continued daily to get worse, losing condition and strength. The swelling of the neck was very great, but there was no definite area of suppuration. His weakness became so marked that he had difficulty in getting up, and when up, in standing on his legs for a very short time.

Suspecting either tuberculosis, septic infection of the cervical vertebræ, or malignant œdema, I was just upon deciding to advise slaughter, when, as a last resource, I again (December 26th) injected him with the strepto-staphylococcal solution. After each injection of increased dosage there was such marked improvement that he was able to return to work by January 25th, since when he has continually remained at work.

After each attack all his legs became greasy, with loss of hair and itchiness, giving him a miserable appearance, but with time and attention this cleared up.

It appeared that the strepto-staphylococcal solution which first acted as an acute septic infection, afterwards became the remedial agent.

Beneficial Insects.

All who have studied insects must have been struck by the fact that the numbers of almost every species vary greatly from year to year. The most notorious of pests do not cause losses every season, and in many cases serious epidemics occur only at considerable intervals. There are several factors responsible for this variation in numbers, and among the most important is the destruction of insects by other insects. Just as, in the case of the larger animals, there are carnivorous species preying upon those that eat plants, so in the case of insects there are predatory species that kill and eat others. In addition to these, and perhaps even more important, there are certain families of insects that have become parasitic on other insects, feeding either within the bodies of the latter or closely attached to them in one way or another.

In a new publication of the Ministry of Agriculture (Bulletin No. 20, "Some Beneficial Insects," price 4d. net) an attempt has been made to give the reader some idea as to which kinds of insects are predatory or parasitic on other and harmful insects, and therefore to be regarded as friends, with a few notes on the manner in which they carry on their good work.

UMI

Municipal Report.

[**Report of the Medical Officer of Health of the City of London for the year 1929.** London: Drake, Driver & Leaver, Ltd., Rosebery Avenue, E.C.1, 1930.]

This report comprises 94 pages and, of these, pages 30-58 are of special interest to our profession. The following items are among those dealt with:—

Bacteriological and Chemical Examinations of Milk-Samples Collected at Railway Stations.

Forty-eight samples from seven different counties were examined: of these, 23 are classified as clean, 24 contained small traces of dirt and one was dirty. Two samples (5·1 per cent.) showed the presence of tubercle. A summary of the percentage of milk samples showing tuberculous infection since 1904 is given—the percentages varying from 26·3 in 1921 to 2·4 in 1925.

Supervision of Food and Drugs.

Nine hundred and eighty samples were examined, of which 16 were reported against. "The percentage rate of adulteration of all foods and drugs examined sampled in the city was 3·8 as compared with 2·4 in 1928." The foods examined comprised such items as butter, cream, sausages, etc.

Examination of Milk (Chemical).

Of 263 samples examined, 11, or 4·1 per cent., were certified as adulterated.

The Milk & Dairies Order, 1926, and the Milk & Dairies (Amendment) Act, 1922.

"Sixteen new applications for registration as retail purveyors of milk were received during the year, 15 of which were approved." At the end of 1929 there were 273 retail purveyors of milk on the register. During the year 279 inspections were made in connection with the sale of milk. Legal proceedings in connection with the bottling of milk in the street were taken in two instances and convictions recorded.

Meat Inspection.

This report is prepared by the Veterinary Officer, Lieut.-Colonel T. D. Young. It shows that, in all, 465,851 tons of beef, veal, mutton, lamb, pork, bacon, poultry, game, rabbits, butter, cheese and eggs arrived in London from all over the world. More "British" diseased meat than in 1928 was discovered in the markets. The report suggests reasons for this and adds that "meat inspection in this country cannot be complete until all carcasses and organs are examined at the places of slaughter and the meat officially stamped." Special paragraphs are devoted to (*a*) Tuberculosis in pigs—especially in relation to infection with the avian tubercle bacillus; (*b*) Quick freezing of meats; (*c*) Caseous lymphadenitis, which accounts for much of the unsound mutton received from Argentine, New Zealand, Uruguay, Chili, etc. Interesting tables are given in connection with the amounts of unsound meat destroyed during the year—from all sources these amount to over 1,127 tons.

In connection with the facilities given to schools, etc., for practical experience in meat inspection, it is of interest to read that "facilities have already been granted to teaching institutions, and their number has now been increased by adding to the list the London School of Hygiene and Tropical Medicine, in whose course of instruction to medical practitioners qualifying for the Diploma in Public Health would exist a gap were this practical experience not available to their students."

Fish is also dealt with. It is stated that of the 239,332 tons, 1,587, or 0·633 per cent., were condemned.

The report should prove of considerable interest and value to Veterinary Inspectors generally.

T. D.

N.V.M.A. Divisional Reports.

South-Eastern Division.

Clinical Papers at Tunbridge Wells.

Election of Office-Bearers.

The active participation of a considerable number of members in the provision of a programme mainly of clinical interest was a pleasing feature of the autumn meeting of the South-Eastern Division, N.V.M.A., which was held at the Castle Hotel, Tunbridge Wells, on Wednesday, November 5th, 1930.

Practitioners never weary of the recital of cases possessing a bearing upon their own daily work, and the excellence of the attendance was thus but to be expected, and bore further witness to the popularity of case presentation and discussion as a method of spending an afternoon of both profit and social enjoyment. For details of the cases related and a report of such discussion as took place upon them, readers are referred to the Clinical and Case Reports Section of this issue of the *Veterinary Record*, to which the account of this preponderating portion of the proceedings has been transferred.

The President, Mr. Henry Taylor, occupied the chair, and there were also present: Captain J. Bell, Captain F. Crowhurst, Mr. J. B. Dier, Mr. R. A. Edwards, Captain F. C. Gillard, Mr. H. Gooch, Captain W. D. Halfhead, Messrs. H. S. Head, H. P. Hogben, S. F. J. Hodgman, Captain F. Marks, Captain J. H. Mason, Captain C. W. Perrin, Mr. J. W. Pritchard, Major L. P. Pugh, Mr. C. Roberts, Major C. Rose, Mr. A. Spicer, Captain A. Whicher and the Hon. Secretary, Major T. Dalling, together with the following visitors:—Captain W. Andrew, Mr. J. K. Bateman, Major J. I. Edgar, Mr. S. E. Holmans, Major D. Macdonald, and Captain E. Wemys Morton.

The minutes of the previous meeting, which had been published in the *Record*, were taken as read and were confirmed.

Correspondence.

(1) From Mr. E. P. Barrett, Mr. J. G. Cattell, Captain A. T. Crowther, Principal F. T. G. Hobday, Mr. T. F. Hogben, Mr. E. Morgan and Mr. T. J. Richardson, apologising for their inability to attend the meeting.

(2) From the Secretary of the N.V.M.A., expressing, on behalf of the Organising Committee of the Association, the hope that the Division would appoint a small committee the members of which would, either singly or collectively, endeavour to secure new members for the "National."

The President observed that, at a Council meeting of

the Division held earlier in the day, this communication was considered and the general opinion was that the Hon. Secretary could attend to the matter referred to therein.

The meeting concurred.

(3) From the Secretary of the N.V.M.A., informing the Division of the alteration which had been effected in the Articles of Association of the "National" by reason of which the representation of Divisions upon the Council of that body has been increased from the Hon. Secretary and one for every 50 members or portion thereof, to the Hon. Secretary and one for every 35 members or portion thereof.

That alteration, observed the Hon. Secretary, would entitle the Division to an additional representative, a matter which would be dealt with later in the agenda.

(4) From the Secretary of the N.V.M.A., enclosing, for the information of the committee suggested in (2), a list of recent specific instances in which the Association had been successful in representations made in the interests of members of the profession, with particular reference to appointments. The list was read by the Hon. Secretary, and greeted with applause.

Reports of Delegates.

Royal Sanitary Institute Congress, Margate, June, 1930. —The Hon. Secretary (Major Dalling) presented his report in his capacity as the Division's delegate to this Congress. The report was as follows:—

It was very kind of you to agree to my representing this Society at the Royal Sanitary Institute Congress held at Margate in June of this year, but I am afraid that the report I now wish to present to you will contain only facts with which you are already familiar, as a *verbatim* report of the proceedings of the Section of Veterinary Hygiene has already been published in the *Veterinary Record* (issues of August 9th, 16th and 23rd). I will endeavour briefly, however, to give you my own impressions of the proceedings.

I attended the Congress in a three-fold capacity—I was there as a Vice-President of the Section of Veterinary Hygiene, I represented the Society and I represented the Wellcome Laboratories. The choice of Margate as a centre for the Congress seemed admirable and a perusal of the literature issued to delegates by the Corporation of Margate early impressed one that the town would leave no stone unturned to make the Congress a success. For example, the mere showing of the Congress badge entitled one to many privileges, *e.g.*, free rides in the tramcars, free use of chairs in parks, free use of the swimming baths and bathing pools, etc., etc. Doubtless many who stayed during the whole week made ample use of these privileges.

The items of chief interest to us were the meetings of the Section of Veterinary Hygiene and the Popular Lecture delivered one evening to the entire Congress by Dr. O. Charnock Bradley, entitled: "Diseases of Domestic Animals from the Human Angle." Unfortunately, I was unable to be present at this lecture, but after reading his lecture and hearing and overhearing discussions on it, I feel sure Dr. Bradley drove home the various points he discussed.

The Section of Veterinary Hygiene met on two mornings under the Chairmanship of the President, Major-General Sir John Moore, who, with his usual good grace, conducted the proceedings in an admirable manner. His Presidential Address was more or less what we expected from him—his personal views regarding the state of the Control of Tuberculosis of Animals in this country. We all know and agree with Sir John's views. I personally was deeply impressed by the reception he got and was only too pleased to be able to be present to support him. One sentence from his address summarises his remarks: "I therefore make a strong plea that the Ministries of Health and of Agriculture should take counsel together with a view to enquiry and necessary action, taking evidence from all parties concerned, perfecting those ordinances which already exist in part control of the disease, and adopting others which will make control more absolute. I am confident that at all times Public Health Services would have the hearty and unstinted support of members of the veterinary profession. . . Nevertheless, I feel very actively that tuberculosis in animals and its reflection on human beings is not receiving that attention from the State which is deservedly and potently necessary."

Major D. S. Rabagliati read a paper on "Veterinary Science in Relation to State and Municipal Control." He spoke plainly and did not mince his words in describing the benefits the country as a whole derived from its use of the veterinary profession in matters in which it was allowed to assist. It was a joy to hear him criticise the absurdities existing to-day where work, which could only be adequately carried out by the members of the profession because of their training and knowledge, was being dealt with by others. Doubtless it came as a shock to many to hear him say that "on the staff of the Ministry of Health there is not one member of the veterinary profession to advise the Ministry in matters pertaining to animal disease. Yet such is the ignorance of our people on these matters that this Gilbertian procedure passes unnoticed—uncriticised."

His, truly, was a great paper and made a deep impression. The mere fact that ten delegates entered into the discussion and time prevented others from speaking, gives some idea of the interest it created. And the discussion was not all in agreement with his remarks, but Major Rabagliati ably defended his views.

We were favoured by the presence of that good friend to the profession—Alderman Sheriff W. Phené Neal (Lord Mayor-Elect of London), who opened the discussion. His remarks showed him still to be a true friend of the profession.

The other paper was given by Arthur Gofton on "The Inspection of Foodstuffs, exclusive of Meat, Milk and Fish." I personally learned a lot from the paper. We heard about adulterations of flour, oatmeal, etc., the examination of fish and tinned fruits for purity and the causes of their becoming decayed, etc., ptomaine poisoning and a host of interesting facts in connection with the inspection of food stuffs. The paper put in a nutshell much available knowledge, to acquire which would mean the hunting up of literature from all sources. It will, I feel sure, serve as a help and guide to those, veterinary and lay, engaged in the inspection of food stuffs. Twelve delegates discussed the paper and added their experiences to those already given.

I feel that, on the whole, the Section of Veterinary Hygiene of the Congress did good work. The public got some further idea of what is being done for them and

how necessary it is to maintain an up-to-date State Veterinary Service. Year after year the Section meets at the Annual Congress and discusses subjects of National importance. The fact that 187 delegates attended the section meetings, and of these only 26 were veterinarians, shows the interest taken by delegates, etc., other than members of the profession, in the work done by the Section. (Applause.)

Eleventh International Veterinary Congress.—An able report as the delegate of the Division to this Congress was presented by the President (Mr. Henry Taylor). [As reports of the proceedings of this Congress are being published as a feature of the *Record*, week by week, reference to delegates' reports to Divisions is confined to the announcement of their presentation.—Ed.]

The delegates to both Congresses were accorded a hearty vote of thanks for their attendance and valuable reports.

Nominations for Membership.—The following nominations were made:—Mr. J. K. Bateman (proposed by Hon. Secretary, seconded by Mr. Dier), Captain G. W. Bloxome (proposed by the President, seconded by the Hon. Secretary), Major J. I. Edgar (proposed by Major Rose, seconded by the Hon. Secretary), and Mr. S. E. Holmans (proposed by Captain J. Bell, seconded by Mr. Hodgman).

Election.—Captain H. S. A. Dunn, of Hove (nominated at the previous meeting) was unanimously elected as a member of the Division.

Annual Dinner and Next Meeting.—The Hon. Secretary introduced consideration of this subject by observing that there was a certain amount of feeling that the Division had adopted an unfortunate policy in dropping the Annual Dinner last year. The question now arose as to whether or not the function should be re-instituted.

The President said that it had been suggested that, if the next meeting of the Division were held in London, the dinner could be incorporated in that event.

It was eventually agreed, on the proposition of the Hon. Secretary, seconded by Mr. Hogben, to invite Professor James Macqueen to read a paper at the next meeting of the Division to be held in London, early in 1931, to be followed by a dinner, with Professor Macqueen as the guest of honour, and at which the attendance of ladies would be welcome. The President, the Hon. Secretary and Mr. Hodgman were appointed a committee to make the requisite arrangements.

Election of Officers.

The meeting now proceeded to the election of office-bearers for the year 1930-31.

President.—The retiring President (Mr. Taylor) said that for this office he had a name to submit to them which he was sure would meet with their full approval; it was that of their old friend Mr. H. P. Hogben. (Applause.) Mr. Hogben had been their faithful and capable Secretary for a good many years, prior to his retirement from the post now held by Mr. Dalling. He was confident that Mr. Hogben's name, as President, would meet with enthusiastic acceptance.

The election was made with acclamation.

Vice-Presidents.—The retiring President, and Messrs. C. Crowhurst, F. Crowhurst and E. Ebbetts were unanimously elected.

Council.—The following gentlemen were elected to serve as the Council of the Division: Messrs. J. G. Cattell, A. T. Crowther, J. B. Dier, F. C. Gillard, F. T. Hogben, F. Marks, E. Morgan, C. Roberts (re-elected) and A. Spicer.

Hon. Secretary and Treasurer.—Major T. Dalling (re-elected).

Hon. Auditors.—Messrs. C. W. Perrin and A. Whicher (re-elected).

Representatives to Council, N.V.M.A.—The new basis of representation entitled the Division to an additional representative, and Major L. P. Pugh was elected to accompany Major G. W. Dunkin (re-elected) and the Hon. Secretary (*ex-officio*).

Representative to the Victoria Veterinary Benevolent Fund.—Mr. A. Whicher having signified his desire to withdraw from this office, owing to his inability to attend the meetings of the Fund, although his interest in it remained undiminished, Major L. P. Pugh was elected in his stead.

Papers.—The meeting now proceeded with the consideration of papers on subjects of clinical interest, presented by Messrs. A. Spicer, L. P. Pugh, J. Bell, C. W. Perrin, F. C. Gillard, S. F. J. Hodgman and J. W. Pritchard. The presentation of these papers (for which readers are referred to the clinical section of this issue) and their discussion, occupied the remainder of the afternoon (with a brief interval for tea) in a most interesting and instructive manner.

The meeting concluded with the passing of hearty votes of thanks to the essayists, and also to the Chairman for his conduct of the proceedings.

T. Dalling, *Hon. Secretary.*

Derbyshire Division.*

Officers Elected at Derby.

At a meeting of the Derbyshire Division, N.V.M.A., held at the County Agricultural Institute, St. Mary's Gate, Derby, on Tuesday, October 14th, 1930, there were present Captain O. V. Gunning, in the Chair, Major Bagshaw, Messrs. Abson, Gregory, Evershed, Levie, Wilkinson, and Mr. W. J. Ironside (Hon. Secretary). Mr. J. R. Bond was present by invitation.

Apologies for absence were received from Messrs. Auchterlonie, Cockburn, Eaton, Torrance and Marrison.

The minutes of the previous meeting were taken as read and, having been approved, were signed by the Chairman.

Nomination of New Members.—Mr. Tweed, of Sheffield, was proposed by Mr. Ironside and seconded by Major Bagshaw, and Mr. H. V. Morris was nominated by Captain Gunning and seconded by Mr. Levie.

Election of New Members.—Messrs. H. L. Torrance (Nottingham), L. A. Auchterlonie (Nottingham) and G. Eaton (Hallaton) were elected members of the Division.

Correspondence was read from the Secretary of the National Veterinary Medical Association, suggesting that a Committee of three be formed to induce non-members of the Association to join the N.V.M.A.

It was agreed to appoint such a Committee and that it consist of the President, Vice-President (retiring President) and Secretary.

* Received on November 19th.

ELECTION OF OFFICERS.

President: Captain O. V. Gunning (re-elected).

Vice-Presidents: Major Bagshaw, Mr. H. W. Steele-Bodger, Mr. H. S. Cockburn.

Secretary and Treasurer: Mr. W. J. Ironside (re-elected).

Council: Messrs. Cockburn, Deville, Furness, Levie, Steele-Bodger and Wilkinson.

Auditors: Messrs. Evershed and Levie.

The President called on Mr. J. M. DICKSON, M.A., B.SC., to read his paper entitled "Some Factors Affecting the Feeding Values of Pastures." [This paper and the ensuing discussion, are reproduced earlier in this issue of the *Record*.—ED.]

A vote of thanks was passed to Mr. Dickson on the proposition of Major Bagshawe, seconded by Mr. Evershed.

Mr. Bond was also thanked for granting the use of the Agricultural Institute for the meeting.

RESOLUTION.

On the proposal of Mr. EVERSHED, and seconded by Mr. ABSON, it was agreed that the following resolution be forwarded to the N.V.M.A.

"That some enquiry be directed into the People's Dispensary for Sick Animals of the Poor, with special reference to:

(1) The aims of the Society.

(2) The training of those of its officials responsible for the treatment of animals,

and that the object of the enquiry be to determine whether the following interests are adequately protected:—

(1) Those of sick animals.

(2) Those of Veterinary Practitioners."

W. J. IRONSIDE, *Hon. Secretary*.

Economical Feeding of Stock.

The importance of good and early grazing—got by the proper use of artificial fertilisers on suitable fields—has been emphasised in recent years by the findings of scientists that young grass on good soils is of nearly as high a feeding value as linseed cake. The cutting of young grass when cattle or sheep are not available to eat it and its storage in blocks as "grass cake" has been attempted, but does not seem to be as yet an economic reality.

But leafy herbage cut early, or grazed first and cut late and turned into hay, makes a good substitute for young grass or grass cake. Hay may not contain so much protein per cent., but as there is a much greater bulk of it the hay will contain a great deal more protein per acre. Fed to stock with roots or kale it will provide a fair milk yield, though it is probably unwise to allow unlimited hay of ordinary quality to be fed to the heavier milking cows. It is, indeed, possible that the diminished milk yields known at this season may in part be due to cows being allowed to gorge themselves with hay. In moderation, with roots or kale, it will produce the milk required, and the question for the farmer is whether to maintain his quantity of milk by intensive feeding of fewer cows or to get it from a larger number fed less liberally. On paper the intensive feeding may look best, but in practice, when all things are considered, including depreciation of animals, the man with the good grass outturn for dry stock may be more in pocket at the end of the year.

There is no likelihood of a general shortage of milk this winter—rather the other way; and until the milk industry becomes more fully organised in the interests of farmers it seems unwise to produce a surplus to ordinary requirements. When it is organised, then farm and factory butter and cheese can be made of surplus milk in much greater quantity than at present, and once again our own people will be brought into closer touch with the best dairy produce in the world, *i.e.*, our own—to the benefit of themselves and the home producer.—*Ministry of Agriculture.*

In Parliament.

The following questions and answers have been recorded in the House of Commons recently:—

Royal Veterinary College.

Major CARVER asked the Minister of Agriculture what institutions for the promotion of veterinary science exist in the United Kingdom other than the Royal Veterinary College; whether his attention has been called to the danger that the college may have to close down for want of financial support; and whether, to avert this, he is able to offer more help than he has hitherto promised?

Dr. ADDISON: Besides the Royal Veterinary College, the following institutions in Great Britain provide veterinary education: Liverpool University, the Royal (Dick) Veterinary College, Edinburgh, and the Glasgow Veterinary College. In addition, the University Department of Animal Pathology at Cambridge, the Ministry of Agriculture's Veterinary Laboratory at Weybridge, and the station of the Scottish Animal Diseases Research Association, near Edinburgh, exist for the purpose of research in animal diseases. I am fully acquainted with the financial position of the Royal Veterinary College. As the hon. and gallant Member is no doubt aware, the Government have offered to the college on certain conditions a grant of £150,000 towards a scheme of reconstruction costing £250,000, and are further prepared to contemplate an increase of the present maintenance grant when the reconstruction is completed. I sincerely trust that, with the help which the college may be able to obtain from other sources, these grants will be sufficient to avert the closing down of the college, an event which I should deeply deplore.

Research (Vivisection).

Lieut.-Commander KENWORTHY asked the Financial Secretary to the Treasury what are the amounts of the present grants of money per annum from His Majesty's Government for the carrying out of research work entailing vivisection experiments on animals; and whether he has the figures of such grants from the local authorities?

Mr. PETHICK-LAWRENCE: It is not possible to analyse the expenditure from Government or local authority funds on grants for research so as to isolate the expenditure on research work involving animal experiments.

Mr. FREEMAN asked the Secretary of State for the Home Department the estimated cost of keeping a record of the number of animals involved on the basis of the 403,141 experiments for purposes of vivisection performed last year?

THE UNDER-SECRETARY OF STATE FOR THE HOME DEPARTMENT (Mr. Short): The cost would depend on the amount of detail required to be collected and tabulated and the degree of completeness to be attained in the collection. Additional clerical assistance would be needed in any case, and the inspectors would have to give a certain amount of the time which is at present available for "inspection."

Mr. FREEMAN: Does not the hon. Gentleman think that it would be a small amount, and, in view of the millions spent on vaccination, will he not consider keeping a record of this cruel and useless torture of animals?

Wild Animals and Caged Birds (Imports).

Mr. FREEMAN asked the President of the Board of Trade whether he can state, with any classification available, how many wild animals and caged birds have been imported into this country during each of the last 10 years?

Mr. W. GRAHAM: I regret that the information asked for by my hon. Friend is not available.

Rabbits (Trapping).

Sir R. GOWER asked the Home Secretary whether he will consider the desirability of introducing legislation making the trapping of rabbits and other animals with the steel-toothed trap illegal?

Mr. CLYNES: The question has been considered more than once, but, as indicated by my predecessor in reply to a similar question two years ago, the farming industry has been of opinion that these traps are the only available method of preventing the serious economic loss which

would be caused to agriculture by the multiplication of vermin; and I am not aware that the position has changed in any respect.

Brown Squirrels.

Sir R. Gower asked the Home Secretary whether he is aware that furriers are advertising for skins of the British brown squirrel; and whether, having regard to the circumstances that this animal is rapidly becoming extinct, he will take steps for its preservation?

Mr. Clynes: I have no information on the point, nor any power to take any action. I believe it is a matter of common knowledge that the brown squirrel is diminishing in numbers because it cannot compete with the grey squirrel, a foreign species which was imported some years ago, and I am afraid no law could protect it against this menace.

Milk Ration.

Dr. Hastings asked the President of the Board of Education the relative proportions in which certified, grade A (T.T.), pasteurised and ordinary undesignated milk are supplied to children in elementary schools?

Sir C. Trevelyan: I regret that I am unable to give this information. In approving arrangements for the provision of milk by local education authorities the Board call the attention of the authority to the importance of their satisfying themselves as to the purity and quality of the milk, but they have no information as to the relative proportions in which the different grades of milk are supplied.

Milk Supplies.

Mr. Freeman asked the president of the Board of Education whether, in view of the fact that a daily supply of milk for children at school is obtained by less than 1 per cent. throughout the country, he will state what action he proposes to take for its provision to a greater number of children?

Sir C. Trevelyan: If my hon. Friend will refer to his question of 18th November and the answer which I then gave him he will see that it refers solely to the free supply of milk; the total number of children receiving milk in the schools is very much larger, being estimated at some 11 per cent. of the total number of children in attendance.

Mr. Smithers: What steps are taken to see that the milk is tuberculin tested?

Mr. McShane: Is the right hon. Baronet aware that at some schools it is the practice for the children to bring a penny for milk, and that unemployed men are often unable to afford it although their children need it most?

Sir C. Trevelyan: There are a good many local authorities which provide milk free in cases of need.

Mr. Freeman: What is the right hon. Gentleman doing to promote a scheme to provide more milk?

Sir C. Trevelyan: I pointed out the other day that there has been an increase of 100,000 children in the last six months who receive milk in the schools, and I took the opportunity at the Health Congress of explaining the situation and expressing a hope that it was going to be extended very much.

Mr. Boothby: Will not the right hon. Baronet consider passing legislation along the same lines as the legislation recently passed for Scotland?

Sir C. Trevelyan: As a matter of fact, the English authorities have all the power they need.

Horses in Mines.

Sir R. Gower asked the Secretary for Mines (1) whether any report has been received by him regarding broken-winded horses employed in coal mines in this country; and what the nature of such report is;

(2) Whether his attention has been called to the circumstance that many horses and ponies employed in coal mines in South Wales are suffering from broken wind and that the stone-dusting of the haulage roads has a detrimental effect upon the respiratory organs of such horses and ponies; and whether he will consider the desirability of introducing legislation making the employment of horses in dry and dusty mines illegal?

Mr. Shinwell: I have received no such report as is referred to in the first question; and though I have made inquiries, I can find no grounds for the suggestion in the first part of the second question. The number of horses in South Wales suffering from broken wind is very small, and shows no tendency to increase. *Post-mortem* examinations of the lungs of horses employed in mines in different parts of the country have revealed no evidence whatever of the lungs being adversely affected by stone dust. The answer to the second part of that question is therefore also in the negative.

Medical Journals (Advertised Drugs).

Mr. Freeman asked the Minister of Health whether he will consider the desirability of amending the Medical Act of 1886 with a view to controlling advertisements of drugs in medical papers?

Mr. Greenwood: I am not aware that there is any ground for proposing to extend the control which I understand is already exercised over advertisements of this character by the proprietors of the medical journals concerned.

Medical Council and Indian Degrees.

Reply to Plea For Recognition.

Sir Donald MacAlister, at the opening of the 132nd session of the General Medical Council on November 25th, stated that the India Office had communicated the Report of a Conference of Provincial and University Representatives, held at Simla during the summer, for the purpose of considering the creation of an All-India Medical Council. After a full and frank discussion of the position, it was agreed that the creation of such an All-India organization, for the purpose of maintaining a uniform standard of qualifications for the graduates of Indian Universities, was essential and acceptable in principle.

Resolutions concerning the constitution and functions of the proposed Council were adopted, and commended to the Indian Government as the basis of central legislation; and it was urged that without undue delay the necessary steps be taken to bring the new law into operation. The General Medical Council could not but express its satisfaction that a solution of the vexed question of Indian medical standards, applicable to the whole of British India, should be practically envisaged by the Government of India; and that the responsibility for maintaining these standards, especially in relation to their extra-Indian aspects, should be assumed by a Central Indian body having statutory authority. The application of Part II. of the Medical Act, 1886, was made in 1892 by her Majesty in Council to India as a whole, without reference to its Provinces. The Council had accordingly, throughout its discussions on the subject of Indian medical qualifications, continued to look to the Central Government for the information and the guarantees without which its functions under the Act could not be properly performed. It therefore counted with confidence on the speedy establishment of a Central Board or Council for India, comparable with the medical boards or councils of other parts of the Empire with which this Council was in regular official communication, and to which it could refer for authoritative information on all questions and standards.

Communications had been received from India suggesting that, pending the establishment of the All-India Council, special and exceptional measures should be taken by this Council for the recognition of medical degrees granted by the Universities of Bombay and Rangoon. The executive committee had given careful consideration to these applications, but had come to the conclusion that it would not be expedient or, indeed, just to accede to them until the question could be dealt with as a whole, under conditions which would justify the Council's guarantee of their sufficiency.

UMI

Serum Treatment in Connection with Foot-and-Mouth Disease.

"The question of the proper steps to take in dealing with outbreaks of foot-and-mouth disease is one which has always given the Ministry anxious thought," says the *Ministry of Agriculture* in a recent announcement. "The danger to agriculture through such outbreaks is so great, and the disease itself is so extraordinarily contagious, that the Ministry has always held that the only safe policy is immediate slaughter of all affected animals. Determined adherence to that policy has reduced the cases of foot-and-mouth disease in this country to practically negligible proportions at a time when the disease is rampant on the Continent. What few outbreaks there are here are usually mysterious in their origin; for instance, cattle, sheep, or pigs may be found affected in a most out-of-the-way corner of the countryside where no new stock have been brought on the premises for a long time. It is only by farmers reporting suspicious cases at once that the Ministry is able to put the machinery in motion whereby outbreaks are checked or stopped immediately. Contrast this position with that of fifty years and more ago, when the disease was allowed perforce to spread like wild-fire through the country, and the loss to the farming community by it was estimated at several millions of pounds sterling each year. That loss was not so much through death, as the disease is not usually fatal—*i.e.*, it may be so in a small percentage of cases—but the loss of condition of fattening animals, cows in milk, of milk, and of calves born dead is always very great. Indeed, the industry could not possibly afford it. The gross compensation paid by the State to owners of cattle slaughtered because of foot-and-mouth disease this year is less than £2,000.

"A small change has recently been made in the Ministry's procedure in dealing with outbreaks. It is one based upon the experience of several European countries, including Germany, Italy, Holland and Sweden, and consists of the treatment of herds on farms surrounding an infected farm by means of a serum which gives protection against the disease for about ten days in most cases in which it is applied. The serum has no curative properties, nor will its prevent the development of the disease in an animal which already is infected by the germ. It must be looked upon, therefore, as an additional weapon in the armoury of the State's warfare against foot-and-mouth disease. Its existence and use do not in any way alter the Ministry's main policy of immediate slaughter of affected animals. It may, however, be expected to diminish the secondary outbreaks which usually come up in the vicinity of an original centre, and in that way it will diminish the slaughter necessary and the payment of compensation out of public funds. At the same time, it will reduce the loss and inconvenience of a large number of people in country districts when an outbreak of foot-and-mouth disease occurs, as the area over which restriction of movement of animals will be imposed will not need to be so large, nor will it be under restriction so long.

"Taking the results of the serum treatment in the last few cases, eleven cattle treated on nine farms during one outbreak did not develop the disease, nor did nineteen cattle and three pigs treated in another or fourteen cattle and twenty-eight pigs in a third case."

Pig Industry Council.

The standard of quality of the pig supplies of this country is somewhat low, this weakness being accentuated by a lack of knowledge of market requirements, which commonly results in the consignment of pigs to markets for which they are least suited. Moreover, the practice of selling live pigs by auction in ungraded lots renders it difficult for the producer to measure the influence of quality upon price.

The Pig Industry Council has, therefore, under consideration an experiment with the object of testing the practicability of grading live pigs before sale by auction, and hopes shortly to be in a position to discuss with the interests concerned the details of such an experiment.

The Tuberculin Method.

Sir R. Philip on Prevention of Tuberculosis.

Sir Robert Philip, delivering the Malcolm Morris Lecture at the Royal Society of Arts, said that while 50 years ago in Scotland the death-rate from all forms of tuberculosis was 326 per 100,000, last year it was only 97. The decline in mortality from tuberculosis had been much more rapid than the decline in mortality from all causes. There had recently been a remarkable acceleration in the rate of decline in mortality from tuberculosis. During the decade 1901-11 the percentage decrease had been 21, and during the decade 1911-21 the percentage decrease was 31. While in 1871 (five-yearly mean) the deaths from tuberculosis formed 16·8 per cent. of deaths from all causes, in 1921 the percentage was 7·2.

There was a remarkable inequality in the mortality from tuberculosis in different countries and in different cities. Thus, in 1925, the death-rate from tuberculosis per 100,000 of the population was in Sheffield 99, London 112, Manchester 158, Belfast 187. In cities outside Great Britain the inequality was even more striking. Comparable statistics for the year 1920 showed that the death-rate from tuberculosis per 100,000 of the population was in Washington (D.C.) 85, Chicago 97, New York 126, Philadelphia 137, Berlin 177, Paris 179, Warsaw 338, Vienna 405. Those figures could not be explained on the principle of a gradual immunization of civilized populations. The conclusion seemed fair that the decline in mortality had been hastened by the more correct outlook on the field and the better adaptation of measures of attack and defence. By the adoption of certain procedure, it was possible to influence the morbidity of, and the mortality from tuberculosis. To say that the decline in mortality, so evident in Great Britain, was referable to causes acting uniformly throughout the world was to admit ignorance of the facts.

But we had not reached finality. With the constantly enlarging knowledge of the natural history of the disease there was a recurrent call for fresh orientation. While maintaining solicitous care for all cases of tuberculous disease, attention must be shifted more and more towards the earliest indications of tuberculous infection. During childhood the more general use of tuberculin was desirable. Preventive medicine might wisely take a lesson from the sphere of agriculture. A method for the early detection of tubercle which was worth the farmer's while on economic grounds had still greater significance—both medical and economical—in the human race. It would constitute an advance of first importance were it made routine practice on the part of the family doctor, or health officer, to determine in this way the fact and date of initial infection. Observation and effort should be directed to the nursery and schoolroom.—*The Times.*

Tuberculosis in Aberdeenshire.

The County Veterinary Inspector for Aberdeenshire, in his annual report, states that during the year 61 dairy cows in the county were found to be tuberculous. The larger registered dairy farmer, the report stated, knew that it was only by keeping a good class of disease-free cow that he could hope to increase the sales of milk, but unregistered sellers very often had no idea of milk hygiene, no knowledge of when a cow was diseased, and even when they did know their cow was unhealthy, had not the means to dispose of her and replace her with a healthy one. In the latter instance, very often the selling of milk was merely a side line, very little care being taken to see that the purchaser obtained good, clean milk.

UMI

Notes and News.

The Editor will be glad to receive items of professional interest for inclusion in these columns.

Diary of Events.

Dec. 8th.—N.V.M.A. Committee Meetings at 2 Verulam Buildings, Grays Inn, W.C.1 — Finance, 3.30 p.m.; Editorial, 4.30 p.m.

Dec. 9th.—Meeting of the Dumfries and Galloway Division, N.V.M.A., at Dumfries.

Dec. 11th.—R.C.V.S. Oral Examinations commence in Dublin.

Jan. 8th, 1931.—Dramatic Entertainment, organised by Lieut.-Col. P. J. Simpson, in aid of the Victoria Veterinary Benevolent Fund, at the Rudolf Steiner Hall, Park Road, London, N.W.1.

Professor James Macqueen.

We regret to have to inform our readers that the illness of Professor James Macqueen, President of the N.V.M.A., to which reference was made in a recent issue of the *Record*, has taken a somewhat protracted course. The President's recovery having been less rapid than had been hoped, his medical attendant advised his removal to hospital. We are very pleased to be able to state that since Professor Macqueen's admission to the Hampstead General Hospital, which took place early last week, his condition has shown consistent improvement, and that there is every likelihood that he will be able to leave the hospital in the course of a week or so.

R.C.V.S. Obituary.

McCall, George R., late of Blair Tummock, Uasin Gishu, Kenya Colony. Graduated Glasgow, December 21st, 1905; died at Durban, Natal, July, 1930.

Purvis, Herbert O., Sedgefield, Ferryhill, Durham. Graduated Edinburgh, June 1st, 1899; died November 24th, 1930.

. . . . .

Veterinarian's Death From A Fall.

"The sad news was received in Fermoy, on Saturday evening, from Khartoum," says the *Cork Examiner*, of November 24th, of the accidental death, owing to a fall, of Mr. Frank Magnier, Veterinary Surgeon. The deceased was the son of Mr. William J. Magnier, solicitor, Fermoy, and brother of Captain Magnier, solicitor, M.C. Three years ago he passed his veterinary final examination, and after a very short time he received an appointment under the Soudan Government as veterinary inspector, stationed at Madani. During the past week he was at Khartoum, from which place came the announcement of his death. The sympathy of the entire community is extended to his father and mother. Deceased was of a very pleasing disposition, and during his college course made numerous friends. He was at home on leave three months, and was going on very successfully at Madani."

Personal.

Marriage.—Smith—Hepburn.—At the West Church of St. Nicholas, Aberdeen, on November 19th, 1930, by the Rev. A. W. Scudamore Forbes, James Smith, B.Sc., M.R.C.V.S., Burma Veterinary Service, to Florence Isobel, daughter of William Hepburn, F.R.C.V.S., and Mrs. Hepburn, 382 Great Western Road, Aberdeen.

Mr. E. R. Corrigall, M.R.C.V.S., D.V.S.M., was best man at the wedding notified above. After the ceremony a reception was held in the Imperial Hotel, Aberdeen.

. . . . .

Appointment.—Mr. W. S. Codrington, M.R.C.V.S., of Wotton-under-Edge, has been appointed Veterinary Inspector for the Gloucester district, following upon the death of the previous holder of that office, Mr. J. R. A. Jones, M.R.C.V.S.

Erratum.—Major T. F. Arnold, R.A.V.C. (Mona Depôt, Punjab) writes to say that in his article "The Therapeutic Value of Spleen Extract" (*V.R.* Vol. X., No. 42—October 18th—p. 966) the date of administration of the second dose of spleen extract to the Red setter dog should have been given as April 19th, 1930, and not as April 4th.

£10,000,000 a year on Hunting.

A Hunting Correspondent writes as follows in a recent issue of the *Daily Express*:—

"There are some 200 packs of fox hounds in England and Wales. Some idea of how the vast amount of expenditure they represent is distributed may be gained from the following table:—

	£
Forage at £1 a week per horse	4,160,000
Wages to grooms	3,200,000
Shoeing at £7 per horse per season ...	566,000
Cost of keeping hounds	837,000
Saddlery and clothing	500,000
Veterinary surgeons	320,000
Fuel and sundries	423,000

"These calculations are based on the assumption that approximately 80,000 horses are used for fox-hunting in England and Wales—an extremely moderate estimate.

"These figures do not include the thirty-four packs of foxhounds in Scotland and Ireland, the eleven packs of staghounds and the seventy-two packs of mounted harriers, whose expenditure might well bring the total up to £15,000,000.

"Every penny that is spent on fox-hunting goes back into British pockets. We breed our own horses and hounds, and all the equipment and the foodstuffs are British.

"Hunting is a greater national asset from the employment point of view than any other sport, not excluding Association football."

Humane Slaughtering.

"Colonel James Irvine Smith, Director of the Johannesburg Abattoirs and Livestock Market, has designed and installed ten improved cattle stunning pens on the ground floor of the municipal abattoirs," says the *Sunday Times* of South Africa. "Under this arrangement, cattle are no longer dragged by chains into the slaughter halls, but are stunned outside the building by mechanically-operated instruments. General Kemp, who recently inspected the abattoirs, is reported to have been impressed with the magnitude of the establishment, and highly pleased with the Council's white labour policy and humane slaughtering methods in force there."

Good Milking.

Milking classes and county competitions frequently held, have not only encouraged boys and girls to milk well, but have improved "the temper" of the stripper generally at milking time. Careful milkers, possessing the gift of quietness and a willingness to humour the cow, are much more in evidence than half a decade ago. There are enormous differences in yields to be obtained by milkers. Some will leave as much as a shillingsworth of fat in the udder at every milking. Investigations in one herd revealed the fact that 16·9 per cent. of the fat was lost by failure to milk out thoroughly. Certain milkers are able to get 20 per cent. more fluid than others.—*The Times.*

Milk Production.

"The milk-producing business is unsettled at the moment," says the Agricultural Correspondent of *The Times.* "This is due to a large number of farmers being unable to find buyers. Much more milk ought to be consumed in Britain than is at the moment, and the provision of milk in elementary schools is certainly having the effect of increasing trade outlets. The medical men in New Zealand are watching with interest the development of the demand for milk among school children in England and Scotland. Were the general public alive to the fact that milk production in England and Wales has never been carried out with such efficiency, cleanliness, and economy as it is to-day, there would be an increased demand for the product. The lessons lately learned by dairy farmers are that bad housing, irregularity of feeding and milking, scanty watering, and rough handling of the cattle will neutralize all the good effects of the best food given to the animals. Good herd management is even more important than well-balanced rations."

Correspondence.

Letters to the Editor should reach the Office not later than by the first post on Tuesday morning for insertion in following Saturday's issue.
All correspondence must bear the name and address of the contributor for publication.
The Editor does not hold himself responsible for the opinions of his correspondents.

Tuberculin Testing.

To the Editor of The Veterinary Record.

Sir,—In your issue of November 22nd you published a letter from Mr. R. H. Smythe, in which he takes me to task for advising against the use of the subpalpebral tuberculin test. Mr. Smythe is, I know, a firm advocate of this method, and, in view of the publicity which he has given to this test, his opinions merit a careful consideration.

The first point which he raises is the comparative reliability of the subpalpebral and double intradermal methods. He asserts that he has tested a large number of animals, presumably simultaneously, by both methods, and in several cases he has obtained positive reactions to the former test when the latter has been doubtful or negative; moreover, the reliability of the subpalpebral test has been verified, in some cases, by *post-mortem* examinations. Perhaps one may be permitted to suggest that, by his recognition of the "doubtful reactor," Mr. Smythe shows that he has not yet mastered the interpretation of the double intradermal method. Past experience has clearly shown that such cases are often misinterpreted, and should be regarded as reactors.

With regard to reliability, I would draw his attention to the first report issued by the Tuberculin Committee of the Medical Research Council, and more especially to the section on *post-mortem* findings. He will note that a large number of animals was tested by this method, *immediately* slaughtered, and comprehensive *post-mortem*, microscopical and biological examinations were made. The results revealed in a striking manner the accuracy of the method *when correctly interpreted.*

In *Die Tuberkulose des Rindes* (pp. 72-84), Dr. E. Januschke examines at some length the subpalpebral method of Moussu and gives a clear indication of the great variations in the reactions. He found that, in some cases, the injection produced a definite rise in temperature and no local reaction; in others, there was a well-marked local reaction, but little rise in temperature.

It is highly probable, therefore, that the reactions to the subpalpebral method result, not from the tuberculin which reaches the subcutaneous tissue, but from a small proportion which is brought into the epidermal region. Januschke admits himself that 5 per cent. of the animals which he tested gave a thermal reaction only, *and no local reaction.*

I am fully aware that in the subpalpebral method the injection is essentially subcutaneous, and it was on that ground that I raised an objection to it. The introduction of the double intradermal method was a sequel to the failure of the subcutaneous test in the graded herds. If, therefore, it is desired to carry out a true intradermal test, the palpebral site is less suitable than the skin of the neck; if, on the other hand, the tuberculin is injected subcutaneously, the method is open to all the objections of the subcutaneous test.

Yours faithfully,
R. E. Glover.

Institute of Animal Pathology,
University of Cambridge.
November 29th, 1930.

A "Record" Weight Heifer Calf?

To the Editor of The Veterinary Record.

Sir,—I had an early call this morning to a calving case, the patient being a cow, fourth calf. On examination, the nose and one front foot could be felt. After a good deal of manipulation, I managed to get the other front foot and delivered the calf. As the calf appeared to be very large, we weighed it and found the weight to be 155 pounds. The calf, a heifer, was alive when first seen by the cowman, but was dead on my arrival. Is this a "record" weight for a heifer calf?

Yours faithfully,
Edward A. Burgon.

Haverhill, Suffolk.
November 28th, 1930.

[We have knowledge of a calf weighing 172 lbs. at birth. This was a bull calf, however, from a Shorthorn cow, and was dead when delivered.—Ed.]

"Pig Lice."

To the Editor of The Veterinary Record.

Sir,—I am at present interested in the study of the pig louse and its variations. It would be thus of great help to me if the practitioners who are engaged in pig-rearing districts would help me by sending me some specimens of these parasites and their eggs. If they are removed off the pig and placed in a small bottle on a piece of cloth and corked (not hermetically sealed with wax, etc.), they will usually travel thus alive.

I would also appreciate it if they were labelled with the date of collecting and the *breed of pig* from which each batch was collected.

Yours truly,
Harvey S. Purchase.

Molteno Institute of Research in Parasitology,
Cambridge.
November 24th, 1930.

The Editor acknowledges the receipt of the following:—
Communications from Mr. W. A. Campbell (Boroughbridge), Major F. J. Dunning (Cape Province), Mr. Henry Gray (London), Mr. E. C. Lloyd (London), and Mr. F. C. Scott (Pontefract).

Report of a meeting of the West of Scotland Division, N.V.M.A., from Mr. D. Campbell, Hon. Secretary.